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ABSTRACT

This final report summarizes work performed by the Western Interstate Commission for Higher Education (WICHE) to develop a plan to regionalize optometric education in the western states. WICHE worked closely with a project advisory committee and the region's three schools of optometry to develop a regional plan. Personnel supply and demand in the western states were surveyed, and other regional educational plans were examined for their applicability to optometry in the West. It was found that the existing 3 schools of optometry can meet the needs of the 13 western states for educational opportunity and for labor supply; and that although supply is favorable, some maldistribution of practitioners exists among the states. The plan developed by WICHE includes the following program components: (1) access and admission based on the needs of each state; (2) a cooperative network of off-campus clinical training sites; (3) a manpower program to encourage distribution; (4) resource sharing among the three schools of optometry; and (5) a financial plan. Coordination of the plan would occur at three levels: among schools, within each state, and at the regional level. A phased implementation schedule and budget are included. Although the region could support the plan's operation, further funding would be required to develop the new program components. (Author/KC)

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PLANS FOR THE DEVELOPMENT OF A REGIONAL PROGRAM OF OPTOMETRIC EDUCATION IN THE WESTERN UNITED STATES

Final Report

Covers Period of Performance
During
September 20, 1978 - June 30, 1980

The Comprehensive Report

Contract No. HRA-232-78-0130

Contractor

Western Interstate Commission for Higher Education
(WICHE)
1540 - 30th Street, P. O. Drawer P
Boulder, Colorado 80302

Contractor's Project Director

Susan D. Klein, Ph.D.

Sponsor

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Health Resources Administration
Division of Allied Health Professions
Room 9-22, Center Building
3700 East-West Highway
Hyattsville, Maryland 20782

U.S. DEPARTMENT OF HEALTH,
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TABLE OF CONTENTS

Page

List of Tables v

Preface. vii

Abstract 1

Introduction to Main Text. 2

Purpose of the Contract. 5

Description of Tasks Required by the Contract. 6

Discussion of Major Tasks: Methodological Approaches and Results. . 9
- A. Establish and Convene a Project Advisory Committee. . . . 9
- B. Review of Regional Health Professional Education Programs. 12
- C. Compile and Analyze Data on Manpower Supply and Needs . . 13
- D. Develop a Preliminary Plan. 17
- E. State Reviews of the Preliminary Plan 19
- F. Develop an Implementation Plan. 21
- G. Develop a Costing Methodology and Budget. 24

Overall Success of the Project 30

Conclusion 33
- A. Viability of the Regional Plan and Factors Affecting Implementation. 33
- B. This Plan as a Model. 33
- C. Future of the Plan. 34

Addenda

A. Implementation of the Plan to Regionalize Optometric Education in the West 37 (A-1--A-72)

B. Materials from Four Meetings of the Project Advisory Committee 121 (B-1--B-35)

TABLE OF CONTENTS
(Continued)

Addenda Page

C. Materials Used in State Reviews 159

Sample Agenda for State Reviews of Regional Plan. 161 (C-1)

List of Participants in State Reviews 163 (C-5--C-12)

State-Specific Description of Regional Plan Used in State Reviews. 173 (C-15--C-48)

Summaries of State Reviews of the Regional Plan 209 (C-51--C-86)

D. Costing and Financial Plan Materials. 247

Total Implementation Budget 249 (D-1--D-11)

Operational Budget for New Regional Program Components. 261 (D-13--D-14)

Cost of Optometric Education Survey and Projections 265 (D-17--D-68)

E. Vision Manpower Needs in the Western States . . . . . . Separately Bound

F. Review of Regional Health Professional Programs . . . . Separately Bound

G. Preliminary Plan--A Regional Plan for Optometric Education in the West, February 5, 1980 . . . . Separately Bound

LIST OF TABLES

Page

Project Advisory Committee 10

Framework of Key Elements. 14

Represented at the State Reviews 20

State Reactions to Regional Plan 22

WICHE Optometry Project Costing Subcommittee 26

Summary of Projected Five-Year Budget. 29

Graphic Presentation of Actual and Forecasted Performance. 32

PREFACE

This project was performed under the direction of Susan Klein, Ph.D., Health Resources Program Director at Western Interstate Commission for Higher Education (WICHE). William R. McConnell, Ed.D., Program Director for the Student Exchange Program, was responsible for the development of the costing materials and was involved in all other aspects of the contract. Allen H. Nelson, Ph.D., Staff Associate, was involved in analyzing the manpower data and developing the manpower projection methodology.

The only major consultant employed was James Topping, Ph.D., who is on the staff of the National Center for Higher Education Management.

ABSTRACT

This Final Report summarizes work performed by the Western Interstate Commission for Higher Education (WICHE) to develop a plan to regionalize optometric education in the western states. WICHE worked closely with a Project Advisory Committee and the region's three schools of optometry to develop a regional plan. Two reports were prepared: 1) a manpower report describes the current supply of optometrists and projects each state's need for optometrists through 1990; 2) a second report examines other regional educational programs/plans for their applicability to optometry in the West. The existing three schools of optometry can meet the needs of the thirteen western states for educational opportunity (access) and for manpower. Although the supply of optometrists for the region is favorable, a maldistribution of practitioners exists among states. In addition, there are populations in the region with unmet vision care needs.

The program components of the Regional Plan include: 1) access and admissions based on the needs of each state; 2) a cooperative network of off-campus clinical training sites; 3) a manpower program to encourage distribution; 4) resource sharing among the three schools of optometry; as well as 5) a financial plan. Coordination of the plan would occur at three levels: among schools, within each state, and at the regional level. A phased implementation schedule and budget is included. Although the region could support the plan's operation, further funding would be required to develop the new program components. After approval by the Advisory Committee, the plan was reviewed by key leaders in each of the western states. The plan and process of development represent a useful model.

INTRODUCTION TO MAIN TEXT

The Western Interstate Commission for Higher Education (WICHE) was created by governors and legislators of the 13 western states to help them provide high-quality, cost effective programs to meet the education and manpower needs of the West. WICHE'S goals are in access--increasing the availability of higher education in the West; manpower--assisting states to have the technically and professionally trained persons they require; and quality-helping states increase the effectiveness and efficiency of their higher education programs. Member states are Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

WICHE has facilitated access to education in the western states through operation of the Student Exchange Program. The largest component of the Student Exchange Program, the Professional Student Exchange (PSEP), enables a student to enroll in a professional program in another state when that field of study is not available in the home state. Through the exchange, the student receives some degree of preference in admission and pays resident tuition at a public school or pays approximately one-third of the standard tuition at a private school, while the student's state pays a support fee to the school receiving the student that helps cover the cost of education. This arrangement provides students throughout the West with increased access to professional programs at reduced tuition rates, while saving the states millions of dollars by avoiding duplication of costly programs already available in the West.

Currently, fifteen professional fields are available through the exchange. Optometry is a field with one of the highest enrollments in the program; in 1978-79 a total of 249 students attended schools of optometry by using the PSEP mechanism. This high number has resulted from the fact that there are only three schools of optometry in the region, two in California and one in Oregon.

Optometrists form an important part of the region's pool of health manpower - particularly in rural areas. The importance of their role is well stated by the Report to the President and Congress on the Status of the Health Professions (1978):

> "Optometrists represent only a small proportion of all health practitioners, but they play a significant role in providing health services, mainly as the point of entry to the health care system for the provision of vision care services."*

After dental caries, vision disorders are the second most prevalent health problem in the population. Problems in seeing are among the most expensive to society. The prevalence of vision disorders is very high and the need for care is great--indeed, over half of the general population report that they have had trouble seeing. In addition, more than half the population wear corrective lenses. Because of the chronic and developmental nature of vision problems, care is needed with increased frequency over one's lifetime. The shifting age distribution of the region's population will be reflected in the greater need for vision care.

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*U.S. Dept. of Health, Education, and Welfare, Health Resources Administration. A Report the President and Congress on the Status of Health Professions Personnel in the United States. U.S. DHEW Publication No. (HRA) 78-93, 1978. p. VI-1, 6-7.

In 1976, WICHE sponsored a study of optometric manpower. The report showed an optometric manpower shortage in all but Montana and Oregon; it also predicted that, if present enrollment trends continued, all WICHE states except Montana would have a serious shortage of optometrists by 1990.

This project to Develop a Regional Plan was developed 1) to re-examine the needs of the WICHE states for optometric manpower and educational access, and 2) to develop a plan that would meet the future needs of the region.

The rationale for a regionalized approach to the problems of enrollment and manpower relating to vision care services was based on the following factors:

- Cost-effectiveness of regionalization,
- Potential of the concept for addressing the problem of maldistribution,
- Previous success of the WAMI program in the West,
- Federal government's support for the concept of regionalization,
- Support of American Optometric Association and the western schools of optometry.

PURPOSE OF THE CONTRACT

The purpose of the contract is to develop an implementation plan for the regionalization of optometric education in the thirteen western states. The plan will include a suitable curriculum model, a projection of student enrollment levels by state for each participating college of optometry, admission criteria and policies, a financial plan whereby the full costs will be equitably shared by participating states, a time-phased activity schedule for implementation, and descriptions of the administrative and/or educational roles of the participating state governments, higher education institutions, and professional associations.

DESCRIPTION OF TASKS REQUIRED BY THE CONTRACT

A. Establish a Project Advisory Committee.

The Project's Advisory Committee was carefully selected to provide diverse views on the development of a regional plan. The Committee included representation from: state governments and legislatures, State Boards of Higher Education, higher education institutions, State Optometric Associations, the Association of Schools and Colleges of Optometry (ASCO), and the Council on Optometric Education (COE).

The Committee provided general direction for the project, advised on matters of project policy, and provided professional consultation to the project staff. This Committee met four times during the project.

B. Review Regional Health Professional Programs.

Staff reviewed active regional health professional educational programs in the West to determine their applicability to optometry. Existing regional optometric educational plans were also reviewed for their applicability.

C. Analyze Optometric Manpower Data.

Existing optometric manpower supply data for the western states were compiled and assessed. This report included estimates of regional manpower needs through 1990 and enrollment data by state.

D. Develop a Preliminary Plan for Regionalization.

This Plan was developed on the basis of the region's needs for manpower and from the review of existing regional health professional educational programs. This plan included a description of educational opportunity (or access), continuing education programs, and other kinds of services that could be provided to participating states through a regional plan. This Plan was reviewed by the Project officer. It was also reviewed, revised and approved by the Project's Advisory Committee before the Plan was reviewed in the western states.

E. State Reviews of the Preliminary Plan.

A meeting was held in each of the thirteen western states to determine each state's interest in developing a regional optometric education program and to assess what resources are available to support such a program. Participants in the state review meetings included representation from: the schools of optometry, state optometric associations, executive and legislative branches of state government, health agencies and state higher education executive offices.

F. Develop an Implementation Plan.

A plan for implementing the proposed Regional Optometric Program was developed. This plan includes:

1. A suitable curriculum model.
2. Projected student enrollment levels.
3. Admissions criteria and policies.
4. A financial plan and costing methodology.
5. A time-phased activity schedule for implementation.
6. A description of the appropriate roles for participating states, schools and professional associations.

G. Develop a Costing Methodology and Financial Plan.

A costing methodology was developed in order to assess the cost of the existing optometric education programs. The costs of the new regional program components were then added to these existing costs of education. In addition, a financial plan was developed whereby the costs of the proposed regional program would be shared equitably by participating states.

DISCUSSION OF MAJOR TASKS:
METHODOLOGICAL APPROACHES AND RESULTS

A. Establish and Convene a Project Advisory Committee.

During the first few months of the project, staff contacted the western schools of optometry and members of the WICHE Commission to obtain recommendations about Committee membership. The Committee was broadly composed, including academicians, practicing optometrists and other officials of state governments and higher education in the West (see list of names and titles on page 10).

This Committee met four times. The first meeting was held at the Southern California College of Optometry in January of 1979. The purpose of that meeting was to orient the Committee to this project, the role of the optometrist and the process of optometric education. The second meeting of the Committee was held at the Pacific University College of Optometry, Forest Grove, Oregon in May. This meeting focused on reviewing manpower data, costing materials, and existing regional plans. The third meeting was held at the Berkeley College of Optometry in November, 1979. At that meeting the Committee reviewed and approved the Preliminary Plan and discussed the upcoming State Review meetings. The last meeting of the Committee was held at the WICHE offices in Boulder in May, 1980. The Committee again endorsed the Regional Plan, reviewed the results of the State Reviews and passed a series of motions regarding the future of the Plan. (The agenda and summaries of these Advisory Committee meetings are included in the Final Report as Addendum B).

PROJECT ADVISORY COMMITTEE

The Advisory Committee met with the WICHE staff four times over the course of the Project. The Committee has endorsed the concept and design of the Regional Plan for Optometric Education.

Jesse C. Beasley, Practicing Optometrist and Member, California Board of Optometry

Emile J. Bernard, Jr., Practicing Optometrist, Louisiana, and Chairman, Council on Optometric Education

James Boucher, Practicing Optometrist, Wyoming

John H. Carr, State Health Officer, Nevada Division of Health

Mardoqueo Chacon, Chairman, Board of New Mexico Health Systems Agency

Ron G. Fair, Practicing Optometrist, Colorado

David Grover, Higher Education Specialist, California Postsecondary Education Commission

Glenn Hackney, Alaska State Senator and WICHE Commissioner

Albert N. Lemoine, Chairman, Department of Ophthalmology, University of Kansas

Edith Maddron, Member, Oregon Educational Coordinating Commission

Ira Moscovice, Health Services Research Center, University of Washington

Richard Neibaur, Director, Wyoming Health Systems Agency

Kristin Paulson, Principal Health Planner, Colorado Department of Health

William B. Phillips, Academic Planning Coordinator, Arizona Board of Regents

Abelina Shaw, Deputy Director of Health, Hawaii Department of Health

Donna Shepard, Senior Fiscal Analyst, Idaho Legislative Fiscal Office

PROJECT ADVISORY COMMITTEE
(Continued)

Gary Slaugh, Practicing Optometrist, Utah

Lee W. Smith, Executive Director, Association of Schools and Colleges of Optometry, Washington, D.C.

Robert K. Thomas, Academic Vice President, Brigham Young University, Utah

William J. Tietz, President, Montana State University

Robert C. Vander Meer, Practicing Optometrist and Secretary, New Mexico Board of Examiners

Treasure Ann Wheeler, Practicing Optometrist and President-Elect, Oregon Optometric Association

Ex-Officio Members:

Willard B. Bleything, Dean, College of Optometry, Pacific University, Oregon

Darrell Carter, Associate Dean for Student Affairs, School of Optometry, University of California, Berkeley

Larry Clausen, Assistant Dean, College of Optometry, Pacific University, Oregon

Richard L. Hopping, President, Southern California College of Optometry

B. Review of regional health professional education programs.

A report entitled "Review of Regional Health Professional Programs" was completed in June of 1979; a copy of this report is included in this Final Report.

Information was assembled about existing regional optometric education programs and active regional education programs in the West. Programs reviewed included:

- Regional Dental Education Program (RDEP)
  University of Washington
- Washington, Alaska, Montana, Idaho (WAMI)
  Medical Education Program, University of Washington
- Western Interstate Commission for Higher Education (WICHE)

The Regional Veterinary Medicine Program of Colorado State University was added to this list. Additional programs to be reviewed were identified through a literature search and through discussions or correspondence with persons knowledgeable about regionalization.

The contract specifically names the plan completed by the New England Board of Higher Education as an existing regional optometric educational arrangement to be included in the review. The study done by the Southern Regional Education Board, and the plan developed subsequently for a Tri-State Regional School of Optometry involving the states of Georgia, North Carolina, and South Carolina were also added.

While not specifically required by the contract, the developing New England School of Veterinary Medicine at Tufts University, a private institution, was also identified for review. Since two of the three existing schools of optometry in the West are private institutions it was thought that this privately based program might yield features that could be applicable to this project.

Other studies of the need for regional plans in optometric education were identified and will be briefly mentioned, although these studies do not describe active programs or existing plans.

A framework of key elements was developed and used in reviewing each regional program and plan. (This framework is on page 14). Finally, the various features of regional plans identified in this analysis were evaluated for their applicability to optometric education in the western states, and the advantages and disadvantages of regionalization discussed.

C. Compile and Analyze data on Manpower Supply and Needs.

A report entitled Vision Manpower Needs in the Western States was completed in June of 1979; a copy is included in this Final Report. The report contains a compilation and assessment of existing optometric manpower supply data for the thriteen western states. By provision of this contract, no primary data were collected. Available data sources used include: The Bureau of Health Manpower and the National Center for Health Statistics (DHEW), the American Optometric Association, state optometric associations, the colleges of optometry and the Western Interstate Commission for Higher Education. This report provides the best possible estimates or projections of the supply of optometric manpower for each state in the West from 1980 to the year 2000. It contains the student enrollment levels projected to be necessary for each state to assure certain levels of manpower supply in the year 2000. In contrast to previous manpower reports, this study includes data on the mobility of optometrists as well as data on the distribution of both optometrists and ophthalmologists by county for the region.

In addition to presenting data on the supply of vision care providers,

FRAMEWORK OF KEY ELEMENTS

I. ACCESS AND ADMISSIONS PROCESS

- A. Need to expand professional education capacity
- B. Equitable access to professional education for residents of participating states
- C. Equitable distribution of regional students among participating schools
- D. Student choice of school
- E. Participation in admission decisions by participating states
- F. Affirmative action in admissions.

II. PROGRAM ELEMENTS

- A. Professional degree program
  - 1. Basic science instruction
  - 2. Clinical training
  - 3. Retention programs for disadvantaged students
  - 4. Other
- B. Graduate professional education
- C. Continuing education
- D. Health care delivery
- E. Other services
  - 1. To the practicing profession
  - 2. To the public

III. INFLUENCE OF PROGRAM ON MANPOWER SUPPLY OF PARTICIPATING STATES

IV. SHARING OF COSTS

- A. Mechanism for payments by participating states
- B. Costing or other basis for payments

V. PARTICIPATION BY STATES IN POLICY-MAKING OF SCHOOL(S) this report also summarizes issues relating to the need and demand for vision services.

Most of the vision services needed in the population relate to the basic vision examination and the correction of refractive error. Optometrists and ophthalmologists overlap in their abilities to perform these services. Thus it is clear that any useful analysis of vision manpower needs must include data on both of these professions. Policy makers who are deciding how many of various types of providers will be needed in the future must resolve the questions about cost and quality cited by this report.

For the WICHE region the supply of optometrists has increased; in 1973 the ratio of optometrists was 10.9 per 100,000 and in 1978 it was 11.4. There is, however, a serious maldistribution of optometrists within the region. Eight states currently have ratios well below the regional average: Alaska, Arizona, Colorado, Hawaii, Nevada, New Mexico, Utah, and Washington. Even when ophthalmologists are taken into account, the same eight states appear below average in their supply of vision manpower. Furthermore, manpower projections show that a maldistribution of vision care providers will persist to the year 2000 if present trends continue. Some states will have a very low supply (Colorado and Utah) and some states face a possible oversupply (Montana, Wyoming, and Hawaii).

The model used to generate the manpower projections in this report allows for migration by both practicing and newly graduated optometrists. Attrition from death and retirement is figured on the basis of age-specific probabilities, and these numbers are subtracted from the manpower pool. New

graduates are added to the pool. A range of projections was generated by changing assumptions related to student enrollments and the in-migration of optometrists.

Two sets of manpower projections have been produced for each of the thirteen states. One set is based on the assumptions that all students who attend optometry school return to their home state and that no in-migration of optometrists occurs; these assumptions yield a low estimate of future supply. The second set of projections assumes that students return at the current observed rate and that migration continues; this method produces a high estimate.

Chapter VI of the report provides a summary of these projections and other manpower data for each state. Based on manpower needs, it may be appropriate for some states to re-examine their policies relating to the support of optometry students.

There are three schools of optometry in the western region: the Pacific University College of Optometry, Southern California School of Optometry at Berkeley. The total enrollment capacity of these schools is about 250 per year. If the eight states currently low in optometric manpower wished to reach the regional average and the high states wished to maintain their supply, the capacity of these three schools could more than meet the region's need.

In addition to manpower needs, states are also concerned with educational opportunity or the access which students have to professional education. Regionally, student access to optometric education is slightly above the national average. However, states such as Alaska, Arizona, and Colorado have relatively low opportunity in comparison to states like Montana and, more recently, Wyoming. Surprisingly, the eleven WICHE states without optometry schools have recently enrolled more students relative to population than the two states with schools.

Other characteristics of optometrists are also examined. Several years ago the age distribution of optometrists was skewed to the high end; it now appears that the supply of young, new graduates will be offsetting those leaving practice. Women and minorities are severely underrepresented among practitioners. Although enrollment figures show steady improvement for women, minority groups do not show similar gains in the profession. In terms of urban-rural distribution, optometrists are much more likely than physicians to locate in non-urban areas.

There are a number of factors which could affect the demand for optometric services. The enactment of national health insurance could increase the demand for care among those who need it. Legislation which provides care for special groups could also generate increased demand. In addition, new means of diagnosis and treatment could result in a greater need for optometrists. The uncertainty of these issues make it difficult to predict precisely what the real demand for optometric services will be in the future.

The goal of any manpower policy should be to meet the needs of the patient population. Providing a supply of providers is only part of the means necessary to improve the vision status of the population. By presenting both data and relevant issues, it is hoped this report will be useful to planners of higher education and health policy makers.

D. Develop a Preliminary Plan

A basic framework for a regional plan for optometric education in the West was drafted by the WICHE staff for discussion at the second meeting of the Project's Advisory Committee. The basic features of the plan included: access and admissions, the development of a decentralized network of clinical teaching sites, a plan to facilitate manpower distribution, continuing education for practitioners, and a financial plan.

The basic framework was discussed at the second and third meetings of the Advisory Committee. The input received from the Committee was for ranging, as would be expected from such a broadly representative group. This Preliminary Regional Plan was revised several times, incorporating as many suggestions as possible of Committee members. In addition the Preliminary Plan relfects meetings that the WICHE staff held with State Optometric Associations to review the Project.

Further details of the Plan were developed and discussed by a Planning Subcommittee, a smaller working group of the Project's Advisory Committee. This Subcommittee included representatives of the three optometry schools. This smaller group met twice between the second and third meetings of the Advisory Committee in order to develop the Preliminary Plan.

The Preliminary Plan was reviewed and approved by the Advisory Committee in November of 1979. This Plan was then used as the basis for the State Review meetings.

The Preliminary Plan included:

1. a brief description of how the Plan was developed
2. the basic objectives of the Plan
3. data on each state's needs for manpower and for educational access (enrollment)
4. description of the program features
    - access and admissions
    - cooperative network of off-campus clinical training sites
    - a manpower program

    - institutional resource sharing.

5. a financial plan
6. a discussion of the Plan's flexibility
7. description of coordinating mechanisms
    - School Coordinating Committee
    - State Coordinating Committee
    - Regional Advisory Committee

A copy of the Preliminary Plan is included in this Final Report.

E. State Reviews of the Preliminary Plan

The Preliminary Plan was reviewed in each of the thirteen western states between January and May of 1980. The WICHE staff requested the State Higher Education Executive Officer or similar official to convene each state meeting.

The group called together to review the Plan was similiar in composition to the Project's Advisory Committee. See page 20 for a summary of the type of participants who attended each meeting. A listing of names and titles of the participants is found in the Addenda to the Final Report.

Each participant was sent a packet of materials in advance of the State Review Meeting. This mailing included: an agenda, a copy of the Preliminary Plan, as well as a brief description of the Plan as it would apply to that particular state (a copy of each of these materials is included in the Addenda to this Final Report).

A WICHE staff member took responsibility for presenting the Regional Plan and its development. In most states a member of the Project's Advisory Committee was present.

In most states the review of the Plan was extremely positive.

REPRESENTED AT THE STATE REVIEW

State	WICHE Commissioners	Advisory Committee Members	SHEEO's State Education Agency	State Legislators	Legislative Staff	Executive Staff	State Optometry Associations	Optometry School Representatives	WICHE Staff	Health Department or HSA or SHPDA	Certifying Officer	Other
Alaska	X	X	X	X	X	X	X		Phil Sirotkin	X	X	Pat Saiki, Hawaii State Senator
Arizona		X					X		Susan Klein		X	
California	X	X	X		X		X	Dick Hopping (SCCO) Darrell Carter (U of CA)	Phil Sirotkin Susan Klein	X		
Colorado		X	X		X	X	X	Wid Bleything (PU)	Phil Sirotkin Bill McConnell Gloria Jimenez			
Hawaii	X	X		X			X	Wid Bleything (PU)	Susan Klein	X		Optometry Student
Idaho	X	X	X	X	X	X	X	Larry Clausen (PU)	Phil Sirotkin Susan Klein Bill McConnell	X	X	
Montana	X	X	X	X			X	Larry Clausen (PU)	Susan Klein	X	X	President, Montana State University WAMI, Montana State University
Nevada	X	X		X	X	X	X	Dick Hopping (SCCO)	Bill McConnell	X	X	Bureau of Services to the Blind
New Mexico	X	X	X		X	X	X	Dick Hopping (SCCO)	Bill McConnell	X	X	Public School Finance
Oregon	X	X	X	X			X	James Miller Wid Bleything (PU) Larry Clausen (PU)	Bill McConnell	X	X	
Utah	X	X	X	X	X	X	X		Phil Sirotkin Susan Klein		X	
Washington	X		X	X	X	X	X	Wid Bleything (PU) Larry Clausen (PU)	Phil Sirotkin Susan Klein	X		
Wyoming	X	X	X				X	Larry Clausen (PU)	Phil Sirotkin	X	X	

Presenting the Plan and supporting data at a meeting is a far more effective method of presentation than mailing a written report. This format allows for questions and answers and general feedback which can be invaluable in establishing regional cooperation. The major advantages and disadvantages of the Plan which emerged from these state meetings are listed on page 22.

F. Develop an Implementation Plan

The Preliminary Plan was modified somewhat to incorporate feedback from the State Reviews, as well as from the final meeting of the Project Advisory Committee.

A Phased Schedule for implementation over a three year period was added to the Plan. In addition, an implementation budget for three years in included, as well as an operational budget for years four and five. A copy of the Implementation Plan is contained in the Addenda.

STATE REACTIONS TO REGIONAL PLAN

STATE	POSITIVE VALUE/ATTRACTION OF PLAN	POSSIBLE PROBLEMS OR CONCERNS
Alaska	• value of additional clinical site to serve rural areas • need to attract practitioners into remote areas	
Arizona	• some in profession see value of clinical site • program could help recruit and counsel pre-optometry students • PSEP support fees could be increased substantially to support plan development	• low rate of acceptance of Arizona students by schools of optometry • relative low level of support for social welfare programs, e.g., no Medicaid • problem to find funding to develop clinical site
California	• possibility of addressing underrepresentation of minorities in profession • delivery of care to underserved populations; particularly minority and inner city	• outside funding for development would make program more attractive • potential for California to become a sending state for field of optometry
Colorado	• state is positive toward "regional concept" • guaranteed return of students to practice in underserved areas	• need to clarify a successful strategy to recruit minorities
Hawaii	• interest in value of additional clinical placement • value of State Coordinating Committee in which profession could be involved	
Idaho	• development of coordinated system to respond to students seeking practice opportunities-value of regional data-based placement service • services that could be provided by clinic to underserved groups; particularly migrants and developmentally disable • potential for clinically-based continuing education and value to practitioners of contacts with students • state generally endorses regional concept	• how can plan/clinic address totality of state's needs-especially in rural areas • cost can be a barrier
Montana	• potential sites include State School for Blind, University-affiliated Program for the Developmentally Disabled at University of Montana, VA Hospital in Helena, Boulder Hospital for the Retarded • state generally endorses value of regionalism • potential for improved continuing education; the idea of optometric education center was raised, with possibility of linking with medical division of CE at MSU • increased communication between schools and state	• recent drop in number of optometry applicants seeking certification (not necessarily a problem because of high O.D. ratio in state). • questionable ability of clinical site to deal with dispersed population (enough patients in one place?) • concern that clinical sites serve primarily an educational purpose and not "use" students

STATE REACTIONS TO REGIONAL PLAN
(Continued)

STATE	POSITIVE VALUE/ATTRACTION OF PLAN	POSSIBLE PROBLEMS OR CONCERNS
Nevada	• possibility for developing another clinical site • increased communication between schools and state	• most students return to practice in state and most communities that can support an O.D. have one
New Mexico	• possibility to enroll all students in Western Schools of Optometry, and perhaps decrease total number supported to off-set operational costs of regional plan	• Practitioners question if there are enough sites that could economically support more O.D.'s if the state's ratio increases to 11.4
Oregon	• clinical site to meet unserved needs could be a selling point • potential for improved continuing education to practitioners • support for "regional" concept	• cost could be a problem
Utah	• on-site clinical facilities will attract students back to Utah • properly situated clinic could serve unmet need in rural areas • potential for clinically based CE • need for support for greater number of students recognized	• cost of establishing clinic • questionable support for more students • question of "servitude" or shifting of resources to justify funding
Washington	• additional training sites in underserved areas • possible mechanism for retaining graduates for practice in the state	• uncertainly about substantially increasing the number of state supported students
Wyoming	• possibility of having a clinical training site for both services and continuing education	• loss of flexibility in current bilateral contracts with the two private schools

G. Develop a Costing Methodology and Budget

Integral to the implementation plan is the financial plan by which the full cost of the regional optometric programs will be equally shared by participating states. The financial plan presents a five-year budget projection and a costing methodology which will permit an equitable sharing of costs among the participating states.

The budget projection contains three elements:

1. The ongoing costs of the existing professional degree programs of the three schools,
2. The costs for planning, developing, and evaluating the new program elements to be implemented under the Regional Plan, and
3. The ongoing costs of the new program elements after the implementation phase is completed.

The ongoing costs of the existing programs were established using a costing methodology developed for the WICHE Professional Student Exchange Program and used since 1977 in setting the per-student fees used in that program to reimburse the "receiving" schools for their net costs in educating students from the "sending" states. The actual per-student costs in 1978-79 for each of the three schools were weighted by the number of students enrolled through the Professional Student Exchange Program to determine a weighted average cost of educating these students in 1978-79. This figure was then projected forward for five years, using an inflation rate derived from a national cost of higher education index. A factor for use of facilities was included, based on historical cost of facilities and fifty-year life, which is consistent with federal indirect cost guidelines. In this budget projection, it is assumed that services comparable to those now realized as contributed services will continue to be available on a contributed basis in the future, and they are not included in the five-year budget. The resulting projected per-student cost figures represent, in per-student terms, the five-year budget for the ongoing costs of the existing professional degree programs of the three schools combined.

The costs for planning and developing the new program elements to be implemented under the Regional Plan are projected in detail in Addendum D. These costs are broken down into three annual budgets, consistent with the phased implementation schedule.

Addendum D shows projected ongoing costs of the new program elements of the Regional Plan in years four and five, after the three-year implementation period. By translating into an annual per-student amount, this part of the budget can be combined with the per-student cost of the existing program.

WICHE staff worked with a Costing Subcommittee (see list of members) to develop these figures. The elements were combined into a five-year budget, which is shown on page 29.

The costing methodology, which will permit an equitable sharing of costs among the participating states, is based on the methodology developed and used for the past several years by the WICHE Professional Student Exchange Program. This costing methodology is explained in Appendix to the Final Report. Since it has been used in the past, the methodology is understood and accepted by the states which will be participants in the regional optometry program. Its principal features are:

1. A net per-student operating cost is determined for each receiving program in a given professional field of exchange. Total operating cost of the professional degree program is reduced by clinic income, federal capitation funding, etc. The net figure is divided by the total enrollment in the program to obtain a per-student amount. From this per-student amount, the amount of tuition paid by the exchange student is subtracted.

WICHE OPTOMETRY PROJECT

Costing Subcommittee

Willard B. Bleything, D.D., M.S.
Dean, Pacific University
College of Optometry
2043 College Way
Forest Grove, Oregon 97116
(503) 357-6151

Dr. Darrell Carter
Associate Dean for Student Affairs
University of California, Berkeley
School of Optometry
Berkeley, CA 94720
(415) 642-2153

Dr. Richard L. Hopping, President
Southern California College of Optometry
2001 Associated Rd.
Fullerton, California 92631
(714) 870-7226

Larry Clausen, Assistant Dean
Pacific University College of Optometry
2043 College Way
Forest Grove, Oregon 97116
(503) 357-6151

Donna Shepard
Senior Fiscal Analyst
Legislative Fiscal Office
327 Statehouse
Boise, Idaho 83720
(208) 384-3531

Denis Curry
Deputy Coordinator for Finance
Council for Postsecondary Education
908 East 5th St.
Olympia, Washington 98504
(206)753-1765

James Boucher
P.O. Box 927
301 S. 8th St.
Laramie, Wyoming 82070
(307) 742-8159

Jim Topping
Senior Associate
National Center for Higher Education
Management Systems
1540 30th St.
Boulder, CO 80302
(303) 497-0386

2. The final net per-student amount in 1. for each program is weighted by the number of exchange students enrolled to arrive at a weighted average per-student amount.
3. This weighted average amount, based on the most recent year's actual financial statements, is projected forward and then used as the basis for the common per-student support fee to be paid to every receiving program in that field of exchange for each exchange student.
4. A per-student amount for use of facilities is added to the figure determined in 3. above.
5. A particular amount for each fiscal year is established, and the amount is adopted two to three years in advance, so that it is known at the time appropriation requests for the year concerned are initially proposed.

In applying this costing procedure to the regional optometry program, the following points were considered:

1. The existing programs of the three schools, and those new elements of the Regional Plan for which ongoing costs are projected, are equally beneficial to all students enrolled, whether they are residents of the states participating in the regional program or not. Therefore, those costs are appropriately charged to all students, to be paid partly by the student as tuition and partly by the home state in the case of students from participating states, and by the student with or without the assistance of some third party in the case of other students.
2. There is no practical way to standardize the amount of tuition to be paid at all three schools by students from the

states participating in the regional program. The schools have differing levels of per-student costs and differing relationships to the institutions or state system to which they relate. The WICHE Professional Student Exchange Program uses an approach which is judged to be reasonable and acceptable to states, students, and institutions. An exchange student attending a public institution is charged resident tuition, and one attending a private institution is charged one-third of full, regular tuition. This is judged a reasonable approach for the regional optometry program.

3. The mechanism used by WICHE has been repeatedly considered in depth, and has been refined from time to time. It is known to the states and institutions which will participate in the regional optometry program, and inclusion of the costs of the new features of the Regional Plan will fit smoothly into the regularized procedures of the existing mechanism.

The State Coordinating Committees and the Regional Advisory Committee will provide regularized channels for states and institutions to participate in the consideration of the amount of the support fee and to express any concerns they may have about the costing procedures and other aspects of the WICHE support mechanism.

The budget figures presented above show projected weighted average per-student costs (prior to the subtraction of the amount of tuition to be charged the student). The actual setting of the per-student payments for future years will be based on periodic surveys of actual costs, including actual costs of the new program elements once they have been implemented.

SUMMARY OF PROJECTED FIVE-YEAR BUDGET

ON-GOING COSTS IN PER-STUDENT TERMS
(Approximately 1,000 Students in Three Schools)

	FY 1981	FY 1982	FY 1983	FY 1984	FY 1985
Cost of Existing Professional Degree Programs (see Appendix F)					
Operational	$5,819	$6,238	$6,687	$7,168	$7,684
Facilities	59	59	59	59	59
Total	$5,878	$6,297	$6,746	$7,227	$7,743
Ongoing Costs of New Program Elements of Regional Plan After Implementation	--	--	--	206	206
TOTAL ONGOING	$5,878	$6,297	$6,746	$7,433	$7,949

PLANNING, DEVELOPMENT, AND EVALUATION OF NEW PROGRAM ELEMENTS OF REGIONAL PLAN
(Cost Summary for Implementation)

	Year 1	Year 2	Year 3
A. Colleges of Optometry			
PUCO	$ 82,725	$ 76,138	$ 48,700
SCCO	93,947	86,949	55,534
UCB	75,275	68,960	53,778
B. Outreach Clinics	4,550	384,050	211,550
C. Placement Network	17,155	14,855	0
D. State Coordinating Committees	19,500	19,500	19,500
E. Regional Advisory Committee	13,300	13,300	6,650
F. WICHE Administrative Costs	76,392	59,832	59,832
G. Newsletter	11,000	11,000	11,000
TOTAL	$393,844	$734,584	$466,544

OVERALL SUCCESS OF THE PROJECT

The work scope outlined in this contract was ambitious for the time available. The contract was originally intended to be completed within eighteen months; however, a three month no-cost extension was requested and allowed. The Chart on page 32 shows how the work progressed. The three month extension allowed for the work to be completed more effectively.

The scope of work, as defined by the contract, has been completed. A Regional Plan has been developed that will provide adequate educational opportunities and help ensure the western region an adequate supply of vision care manpower. On the basis of analysis completed on this contract, it appears that the region does not need an additional school at this time. The Plan will help create greater financial stability for the region's two private schools of optometry, important educational resources in the West.

The proposed Plan will improve the services which schools of optometry provide to the western states. Examples of these services include: clinical services to underserved populations, continuing education programs for practitioners, and consultative services to state agencies. The development of a consortium among the three schools in the region (two private and one public) will not only provide more and better services to the region, but will result in improvement in the quality of the educational process.

This Plan has been endorsed by the Regional Advisory Committee as sound, and the State Review meetings identified considerable support for the Plan. By these measures this is a successful outcome for this contract. It is unlikely, however, that the total plan will actually be implemented without outside funding to develop the proposed new program components.

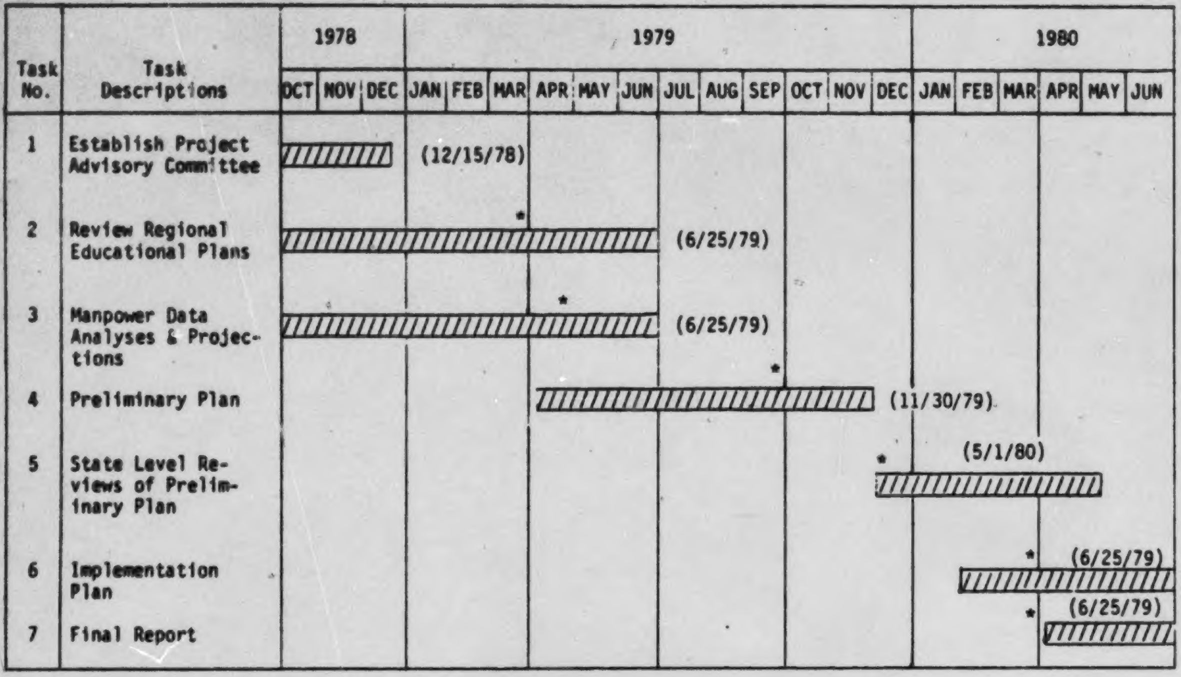
Some of the important benefits of this Project were not anticipated nor easily quantified. For instance, key decision makers in the western states have learned about the importance of optometrists in the delivery of primary vision care. In addition, the three schools of optometry have already benefited from increased dialogue and cooperation.

The Project Advisory Committee and the WICHE staff believe that the Plan - both in terms of content and the process by which it was developed - represents a valuable model for other health professions and other regions of the country.

WESTERN INTERSTATE COMMISSION FOR HIGHER EDUCATION

Contract No. 232-78-0130

Graphic Presentation of Actual and Forecasted Performance
as of 6/30/80



Legend

▨ Completed

▨ Partially Completed

▨ Not Started

*Denotes original due date.

Analysis	Months
Total estimate to date to complete all tasks	18
Total time provided in original contract	18
Total time (actual) of task performance	21

CONCLUSION

A. Viability of the Regional Plan and Factors Affecting Implementation

The value of the Regional Plan for Optometric Education in the West has been endorsed by the Project's Advisory Committee and by meetings held to review the Plan in the WICHE states. The three schools of optometry are committed to the Plan; all three have participated fully in the planning process.

It has been assessed that participating states could support the operational costs of the proposed Regional Plan - after implementation. However, it is clear that the schools of optometry do not have adequate resources to fund the development of the new program components without further and substantial outside funding. The prevailing political climate in the west is conservative, particularly with regard to funding new programs. Thus it is very unlikely that the states will fund the development of the proposed program.

It is unfortunate that this contract funded only planning. Considerable concern has been voiced that this Regional Plan does not merely gather dust.

B. This Plan as a Model

Several aspects of this Plan's development have been particularly valuable:

1. The Plan is based on a careful analysis of the needs of the western states for manpower and educational opportunity;
2. The Project's Advisory Committee played an active and very positive role in advising project staff;
3. An existing regional organization helped to balance the needs of the schools with the needs of the states;

4. The State Review mechanism provided for a thorough discussion of the Plan in the Region. This Plan provides an innovative model for other health professions and for other regions grappling with similiar problems. The decade of the 1980's will clearly be an era where better use must be made of existing resources; the West can help show the value of regional cooperation.

C. Future of the Plan

The schools of optometry are committed to the concept of regionalism. WICHE is committed to helping implement the Plan with the schools when funding becomes available. At its last meeting the Project's Advisory Committee was concerned that actions be instituted to keep the Plan alive until further funding could be secured. The Committee requested that the WICHE Commission create a Regional Advisory Committee. At its June, 1980, meeting the Commission authorized this measure:

> "The Executive Director is authorized to establish a WICHE Regional Advisory Council on Optometric Education at such time as he determines that such a council is timely in order to further the implementation and/or operation of the Regional Plan for Optometric Education in the West. He is further authorized to establish, a one-year duration for the advisory council's work, subject to the extension by the Commission."

The Committee also created an Ad Hoc Committee, chaired by an optometrist from Utah and including representatives of the three schools of optometry and WICHE. This Ad Hoc Committee met on June 30, 1980, to discuss the action taken by the WICHE Commission and to plan for further actions to pursue implementation.

Over the next months, WICHE staff will establish a Regional Advisory Committee for Optometric Education. The schools of optometry will contribute to the agenda for this Committee's meeting. It is hoped that the mechanism will help maintain interest in the Regional Plan and facilitate initial implementation until implementation funding is secured.

ADDENDUM A

IMPLEMENTATION OF THE PLAN TO REGIONALIZE OPTOMETRIC EDUCATION IN THE WEST

IMPLEMENTATION OF THE PLAN TO REGIONALIZE OPTOMETRIC EDUCATION IN THE WEST

June 30, 1980

Contractor

Western Interstate Commission for Higher Education
(WICHE)
1540 - 30th Street, P. O. Drawer P
Boulder, Colorado 80302

Contractor's Project Director

Susan D. Klein, Ph.D.

Contract No. HRA-232-78-0130

Sponsor

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Health Resources Administration
Division of Allied Health Professions
Room 9-22, Center Building
3700 East-West Highway
Hyattsville, Maryland 20782

TABLE OF CONTENTS

Page

List of Tables . . . . A-v

Project Advisory Committee . . . . .A-vii

Executive Summary of the Implementation Plan . . . . A-ix

I. Background to the Development of the Regional Plan A-1

II. Basic Objectives of the Regional Plan. A-3

III. Program Features of the Regional Plan. A-4

  A. Access and Admissions. A-4

  B. Curriculum Model and the Development of a Cooperative Network of Off-Campus Clinical Training Sites. A-15

  C. Manpower Program A-20

  D. Institutional Resource Sharing and Improvement in the Quality of Education A-22

IV. Flexibility of the Plan. A-27

V. Coordinating Mechanisms. A-28

  A. School Coordinating Committee. A-29

  B. State Coordinating Committee A-30

  C. Regional Advisory Committee. A-31

VI. Future of the Plan and Phased Implementation A-32

VII. Financial Plan and Costing Methodology A-36

Appendices A-41

A. Executive Summary from Vision Manpower Needs in the Western States A-43

B. Represented at the State Review. A-47

C. Existing Clinical Sites in the WICHE States Used by Schools of Optometry A-49

TABLE OF CONTENTS
(Continued)

Appendices Page

D. State Reactions to Regional Plan A-55

E. Schedule of State Legislative Sessions A-57

F. Total Implementation Budget. A-59

G. Operational Budget for New Regional Program Components A-71

LIST OF TABLES

Table — Page

1. Annual Enrollments in Entering Class Calculated to Meet Reasonable Manpower Objectives A-7
2. Annual Enrollments in Entering Class Calculated to Meet Reasonable Student Access Objectives A-8
3. Determination of Equitable Enrollments in Annual Entering Class for Use in the Regional Plan A-10
4. Professional Student Exchange Program: Optometry, Academic Year 1978-1979. . . . . A-12
5. Projected Four-Year Student Enrollment Levels for Western Schools of Optometry Under Proposed Regional Plan. . . A-12
6. Equitable Distribution of First-Year Student Spaces by State and Institution. A-13
7. Comparison of Minority Enrollment in WICHE Schools of Optometry with Percentage Active Minority Optometrists in WICHE Region (1973) and Percentage Minority in WICHE Population A-14
8. Phased Implementation of Regional Optometry Plan A-33
9. Summary of Projected Five-Year Budget. A-38

PROJECT ADVISORY COMMITTEE

The Advisory Committee met with the WICHE staff four times over the course of the Project. The Committee has endorsed the concept and design of the Regional Plan for Optometric Education.

Jesse C. Beasley, Practicing Optometrist and Member, California Board of Optometry

Emile J. Bernard, Jr., Practicing Optometrist, Louisiana, and Chairman, Council on Optometric Education

James Boucher, Practicing Optometrist, Wyoming

John H. Carr, State Health Officer, Nevada Division of Health

Mardoqueo Chacon, Chairman, Board of New Mexico Health Systems Agency

Ron G. Fair, Practicing Optometrist, Colorado

David Grover, Higher Education Specialist, California Postsecondary Education Commission

Glenn Hackney, Alaska State Senator and WICHE Commissioner

Albert N. Lemoine, Chairman, Department of Ophthalmology, University of Kansas

Edith Maddron, Member, Oregon Educational Coordinating Commission

Ira Moscovice, Health Services Research Center, University of Washington

Richard Neibaur, Director, Wyoming Health Systems Agency

Kristin Paulson, Principal Health Planner, Colorado Department of Health

William B. Phillips, Academic Planning Coordinator, Arizona Board of Regents

Abelina Shaw, Deputy Director of Health, Hawaii Department of Health

Donna Shepard, Senior Fiscal Analyst, Idaho Legislative Fiscal Office

PROJECT ADVISORY COMMITTEE
(Continued)

Gary Slaugh, Practicing Optometrist, Utah

Lee W. Smith, Executive Director, Association of Schools and Colleges of Optometry, Washington, D.C.

Robert K. Thomas, Academic Vice President, Brigham Young University, Utah

William J. Tietz, President, Montana State University

Robert C. Vander Meer, Practicing Optometrist and Secretary, New Mexico Board of Examiners

Treasure Ann Wheeler, Practicing Optometrist and President-Elect, Oregon Optometric Association

Ex-Officio Members:

Willard B. Bleything, Dean, College of Optometry, Pacific University, Oregon

Darrell Carter, Associate Dean for Student Affairs, School of Optometry, University of California, Berkeley

Larry Clausen, Assistant Dean, College of Optometry, Pacific University, Oregon

Richard L. Hopping, President, Southern California College of Optometry

EXECUTIVE SUMMARY OF THE IMPLEMENTATION PLAN

In cooperation with the three schools of optometry in the West and a broadly representative Advisory Committee, the Western Interstate Commission for Higher Education (WICHE) has developed a Plan to Regionalize Optometric Education. The basic goals of the Plan are: 1) to provide educational opportunity to qualified students, whether or not their home state has a college of optometry; and 2) to provide the region with an adequate supply of vision care manpower. In addition, the Plan will increase the services provided by schools to states, and will strengthen the cooperation among the three schools.

Two reports were completed as a basis for this plan: a manpower report, Vision Manpower Needs in the Western States; and a Review of Regional Health Professional Programs.

The proposed Regional Plan is composed of four major programmatic components:

1. Access and Admissions--enrollment needs for each state are examined on the basis of manpower needs and educational access;
2. Cooperative Network of Off-Campus Clinical Training Sites--the three schools would share their fourth year clinical curriculum while at the same time providing services to participating states;
3. Manpower Program--would help facilitate the placement of students in areas of need; and
4. Institutional Resource Sharing--among the three schools would help improve the quality of education.

Coordination of the Plan would occur at three different levels. Because of its unique role in linking with the thirteen states and with the three schools, the overall coordination of the Plan will be supervised by WICHE. A School Coordinating Committee will be basically responsible for the operation of the educational plan and responsible for policy and procedural issues related to curriculum. A State Coordinating Committee in each western state will be responsible for implementation and coordination of the regional program within each state. A Regional Advisory Committee will provide the overall coordination among states and schools and will generally supervise the Plan.

The contract which funded the development of this Regional Plan supported only planning. Implementation of this Plan would be phased over a three-year period; a schedule and budget for this implementation have been developed. Although operational costs of the Plan could be assumed by the states, it appears that further outside funding would be needed to develop the proposed new program components.

The Regional Plan was reviewed in each of the thirteen western states. The State Review process included representatives of higher education, the optometric profession, WICHE, state health departments, and executive and legislative branches of government. The response in most states was very positive.

This Regional Plan would facilitate the cooperation of existing institutions, both public and private, in meeting the diverse needs of the WICHE states. If successful, this Plan, and the process by which it was developed, could provide an innovative model for other health professions and for other regions grappling with problems of manpower and educational access.

IMPLEMENTATION OF THE PLAN TO REGIONALIZE OPTOMETRIC EDUCATION IN THE WEST

I. Background to the Development of the Regional Plan

The Western Interstate Commission for Higher Education (WICHE) was awarded a contract (HRA-232-78-0130) by the Bureau of Health Manpower, Division of Allied Health Professions, to develop a Regional Plan for optometric education in the thirteen western states. This contract, awarded in September of 1978, supported only planning; further funding will be required to implement the Plan. The basic goals of the Plan are:

- To provide adequate educational opportunities, and
- To ensure that the western states will have enough manpower to meet their vision care needs.

The unique features of the Plan are:

- To improve the services which the existing schools of optometry provide to the western states, and
- To develop cooperative programs among the three schools which can better meet the region's needs.

The project's Advisory Committee met periodically with WICHE staff to help develop the Regional Plan; this committee was composed of representatives of both administrative and legislative branches of state governments, state higher education agencies, the optometric profession, health planning agencies, educational institutions, and others. Contacts were also made with state, regional, and national organizations of the optometrists. Representatives of the three western optometry schools (University of California, Berkeley, School of Optometry; Southern

California College of Optometry; and Pacific University College of Optometry) were actively involved in developing a sound program.

Two reports were completed during the first year of the contract. A manpower report, Vision Manpower Needs in the Western States, examines characteristics of the current supply of optometrists in the West and projects the supply to the year 2000; optometric school enrollments and factors affecting the need and demand for vision services were also analyzed. The Executive Summary of this report is included in Appendix A. A second report, Review of Regional Health Professional Programs, reviews active regional health professional education programs in the western states and existing regional optometric education plans in order to determine their applicability to the regionalization of optometry education in the western United States. These two reports provided the basis for the proposed Regional Plan.

A draft of the preliminary Regional Plan was approved by the Advisory Committee in October, 1979. WICHE then reviewed the Regional Plan with key decision makers in each of the thirteen western states. The state review process included representatives of higher education, the optometric profession, WICHE, state health departments, and the executive and legislative branches of government. Appendix B contains a chart of representatives attending each state review. The primary purpose of these reviews was: 1) to assess the interest of each state in participating in the regional program, and 2) to assess what state resources are available to implement the Plan. The results of the thirteen state reviews have been incorporated into the project's final report. At the time that the report is being written, additional funding is still being sought to implement the proposed Plan and to develop new program components, until operational costs can be assumed by participating states as a part of WICHE's Professional Student Exchange Program support fees.

II. Basic Objectives of the Regional Plan

The health manpower policies of the country are in transition. Policy changes are being affected by several different realizations. First, it appears that the United States may not be facing a "shortage" of health practitioners, but rather a maldistribution problem. Some areas of the West are underserved--most often rural or inner city areas; innovative efforts must be made to encourage new practitioners to serve in these areas. It has become clear that simply producing more practitioners will not necessarily result in improved health status of the population; there is now greater interest in training primary care practitioners instead of specialists. Optometrists are primary vision care providers; they often provide the patient's first contact with the larger health care system. The optometrist may help detect and prevent more serious health problems and refer the patient to a specialist. In addition, optometrists are more likely than physicians to settle in rural areas; optometry services are often more accessible to many of our citizens than other kinds of health care.

It is also apparent that all manpower problems may not be best solved at the federal level; there is growing interest in developing state and regional solutions to these problems. This Plan to regionalize optometric education represents a unique approach to meeting the primary vision care needs of the West. Federal monies have provided an incentive to change; however, real responsibility for the development and implementation of the Plan rests at the state and regional level. The result of this partnership is a Plan which can be responsive to the diverse needs of the western region.

The goals of the program are directed toward the fulfillment of the educational and service needs of the thirteen western states with the assistance of the three optometry schools existing within the region. Each component of the program relates to one or more of these general objectives. The following goals of the Plan are not mutually exclusive, but are in fact complementary:

- Provision of educational opportunity to qualified students, whether or not their home state has a college of optometry;
- Provision and maintenance of an adequate supply of optometric manpower appropriately distributed within the western region;
- Improvement in the delivery of primary vision services to the public;
- Enhancement of the quality of optometric education; and
- Assurance of the financial stability of the optometric schools in the WICHE region in carrying out the various components of the Regional Plan.

III. Program Features of the Regional Plan

A. Access and Admissions

The implementation of a regional admissions plan will provide educational opportunity to qualified applicants in the region and maintain an adequate supply of optometric manpower in each of the western states. The schools have already been pursuing regional admissions plans by participating in WICHE's Professional Student Exchange Program (PSEP) and other direct state contractual mechanisms, and by establishing state enrollment guides within their individual admissions processes. Implementation of a single, coordinated plan for the region would provide more equitable matching of educational resources with states' needs.

There are three schools of optometry in the thirteen western states: Pacific University College of Optometry in Oregon; Southern California College of Optometry in Fullerton, California, and the University of

California School of Optometry in Berkeley. The first two schools are private. The University of California at Berkeley is public and admits mostly California students. At the time the WICHE manpower study was written, there were thirteen schools of optometry in the nation; two new schools have since been opened.

While there are thirteen schools of optometry in the United States, it appears that the optometric education of students from the WICHE region is increasingly concentrated in the schools within the region. In 1977-78, over 90 percent of first year optometry students from WICHE states were enrolled in the western schools.

While the percentage of female enrollments in schools of optometry seems to be improving, the same does not hold true for Blacks, Hispanics, and Native Americans. The proportion of these minority groups enrolled is consistently well below the proportion in the population.

There are two equally important factors which states weigh in deciding how many students to support in any field: educational opportunity and the state's need for manpower. Data on both of these factors are presented in WICHE's manpower study. The particular value placed on these two factors varies from state to state. There are some states that wish to provide their residents high access to professional degree programs even though these states may be reaching a point of oversupply of manpower. Other states may wish to support students mainly on the basis of projected manpower needs and do not place as great importance on providing educational opportunity.

Table 1 presents information about the number of students which should be supported by each state on the basis of manpower considerations alone. The supply of optometrists in the region has increased slightly from 10.9 to 11.4 optometrists per 100,000 population since 1973. Eight states currently have ratios well below the regional average of 11.4: Alaska, Arizona, Colorado, Hawaii, Nevada, New Mexico, Utah, and Washington.* On the basis of manpower projections, it appears that several states should increase significantly the number of students enrolled in schools of optometry (Arizona, Colorado, Nevada, Utah). However, it should be noted that manpower projections are often subject to error, particularly because of inaccuracy in predictions of population growth and migration.

Table 2 presents information relating to access to optometry education in each state. It is difficult to find one best indicator of educational access. The measures in the first two columns are not entirely satisfactory measures of access. Total population in column (1a) and bachelors degrees in column (1b) are proxies, proportionately, for the numbers of state residents reaching the age where they would be eligible to apply for professional education in optometry. Another proxy for this number (in each state) is the number of high school graduates four years prior to the year concerned; it may reflect more precisely the number of long-time state residents which should be given access to optometric education. The annual number of high school graduates will vary considerably over the period 1976-1986, resulting in varying ratios of access from 1980-1990 when this proxy is used in the measure of access; columns (3 a, b, and c) show these varying access ratios. The final column summarizes the various information and suggests the number of students which should be supported by each state on the basis of access to education only.

---

*These data have been taken from WICHE's report entitled, Vision Manpower Needs in the Western States (June, 1979).

TABLE 1

ANNUAL ENROLLMENTS IN ENTERING CLASS CALCULATED TO MEET REASONABLE MANPOWER OBJECTIVES

	Optometrists Per 100,000 Population				
State	Current Ratio 1978	Reasonable Objective 2000[1]	Annual Enrollment in Entering Class to Meet Objective[2]	Special Considerations[3]	Indicated Number from Standpoint of Manpower
ALASKA	9.2	11.4	0.0	Sparcity of population. Needs of native groups.	1
ARIZONA	8.4	11.4	7.4	Proportion of aged population requiring greater care.	9
CALIFORNIA	12.5	12.5	79.6		80
COLORADO	9.3	11.4	15.5	Prospective energy boom may prove population projection to be low.	16
HAWAII	9.4	11.4	3.7		4
IDAHO	12.2	12.2	0.4	Low ratio of ophthalmologists	1
MONTANA	15.1	15.1	7.6	Present very high ratio. Low ophthalmologist ratio	7
NEVADA	8.3	11.4	6.1		6
NEW MEXICO	7.4	11.4	6.4		7
OREGON	13.6	13.6	6.1		6
UTAH	6.7	11.4	12.4		12
WASHINGTON	9.9	11.4	22.7	Migration measure probably reflects abnormal period of soft economy. Recent heavy in-migration probably has reversed that reading.	18
WYOMING	13.0	13.0	0.0	Population projections--probably low.	0
REGION	11.4	12.2	167.9		167

[1] Those now above regional average are kept at current ratio. Those now below are raised to regional average.

[2] Assumes students return to home state at recent rate and assumes migration at recent rate. (p. 80, Vision Manpower Needs in the Western States).

[3] See state summaries in Vision Manpower Needs in the Western States, from page 85 on.

TABLE 2

ANNUAL ENROLLMENTS IN ENTERING CLASS CALCULATED TO MEET REASONABLE STUDENT ACCESS OBJECTIVES

State	Column 1		Column 2	Column 3			Column 4	Column 5
	Average for 1975-1977 Entering Classes		Number[2] Needed/1980 Population to Meet Region Average (.50)	Ratio of Number[3] in Preceding Column Per 1,000 High School Grads 4 Years Earlier			Special Considerations	Indicated Number from Standpoint of Student Access
	a Number[1] per 100,000 Population	b Number per 100[1] Bachelor Degrees Granted in State		a 1979-1981	b 1984-1986	c 1989-1991		
ALASKA	.40	.33	2	.443	.358	.403	-	2
ARIZONA	.35	.09	13	.494	.444	.464		12
CALIFORNIA	.45	.12	112	.417	.445	.508	As in other professional fields, California can be expected to have significant numbers enrolled in schools outside region	95
COLORADO	.38	.07	14	.392	.381	.419		15
HAWAII	.82	.20	5	.439	.436	.536		5
IDAHO	.51	.15	5	.395	.384	.399		5
MONTANA	1.27	.26	4	.326	.348	.419	High interest & past generous support	5
NEVADA	.86	.37	3	.394	.335	.365		4
NEW MEXICO	.71	.17	6	.332	.330	.400		7
OREGON	.57	.13	12	.393	.403	.428		12
UTAH	.54	.07	7	.354	.350	.351		9
WASHINGTON	.45	.10	18	.353	.362	.396		20
WYOMING	1.61	.50	2	.348	.326	.328	State's policy of providing great access in many professions	4
REGION	.50	.12	203	.402	.413	.460		195
U.S.	.49	.12						

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[1] Vision Manpower Needs in the Western States, page 59. Also, see footnotes there.

[2] 1980 population from individual state tables in Vision Manpower Needs in the Western States.

[3] High school graduates from Projections of High School Graduates in the West, published by WICHE, June 1979.

Table 3 summarizes the data suggested by both manpower and access considerations, compares those figures with current enrollments, and suggests an equitable target for each state. The numbers listed in the columns on Table 3 reflect a series of judgments based on the data presented in Tables 1, 2, and 3. States may wish to consider other factors in deciding what numbers of students to support. For instance, these numbers do not in any way reflect a correction of the underrepresentation of minorities. In addition, these numbers assume that all graduates will become active practitioners; in reality, all do not become active practitioners. A state's final judgment about how many students to support in optometry is clearly subject to fiscal, political, and other considerations. Table 4 shows how many students are currently being supported by states through the traditional Student Exchange Program administered by WICHE.

In this Regional Plan, access to education would be achieved through legislative action in individual states. The three schools collectively would guarantee a minimum number of admission slots for qualified applicants from each of the participating states. In other words, the states within the region would be assured that a certain percent of the enrollments will come from the sending states, provided that the applicants are qualified. The minimum number of admission slots for each participating state would be established on the basis of recent application and acceptance trends in each of the three schools. Decisions on individual admissions would be made by each school. Equitable distribution of the region's students regarding admissions to the three schools would occur through individual school action, cooperating with the advice of a Regional Advisory Committee (see the description of Coordinating Mechanisms on Page A-28.

TABLE 3

DETERMINATION OF EQUITABLE ENROLLMENTS IN ANNUAL ENTERING CLASS FOR USE IN THE REGIONAL PLAN

	Indicated Annual Number in Entering Class					
	From Manpower Standpoint	From Access Standpoint	Average[1] Number Actually Enrolled 1974-1978	Current Limit[2] on Number Supported in WICHE PSEP	Number[7] Used in Regional Plan	State Decision About Number of Students to Support
ALASKA	1	2	1.5	No limit	2	
ARIZONA	9	12	7.0	6	11	
CALIFORNIA	80	95	94.5	(57)[3]	90	
COLORADO	16	15	8.0	10	15	
HAWAII	4	5	8.0	6	5	
IDAHO	1	5	4.0	4	4	
MONTANA	7	5	7.5	5	6	
NEVADA	6	4	4.5	4	5	
NEW MEXICO	7	7	9.0	7[4]	7	
OREGON	6	12	14.0	7	10	
UTAH	12	9	7.0	4	10	
WASHINGTON	18	20	18.5	11	19	
WYOMING[8]	0	4	8.0	9[5]	4	
REGION	167	195	191.5	76[9](133)[6]	188	

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[1] Individual state tables in Vision Manpower Needs in the Western States.

[2] WICHE PSEP administrator.

[3] Californians in U. of California, Berkeley entering class, 1977-78; other Californians attend Southern California College of Optometry, Pacific U. College of Optometry, and out-of-region schools.

[4] Includes 3 contract places at Houston.

[5] Under bilateral contracts with Southern California College of Optometry and Pacific University College of Optometry, not WICHE.

[6] Including the 57 for California.

[7] NOTE: this number reflects a judgment by the WICHE staff about the minimum number of students which should be enrolled by each state.

[8] Wyoming will support all students who wish to attend optometry school.

[9] Includes a figure of 3 for Alaska.

Under the Regional Plan, students could apply to any or all schools. Acceptance at one school would not guarantee acceptance by another school. To facilitate regional program operation, schools would adopt a common date for announcing student acceptances. The student would also choose which admissions opportunity he or she wished to accept.

Under this Regional Plan, the participating schools would give preference to qualified students from the participating states. The schools could accept qualified students from other states outside the region to fill those spaces not required by the states participating in this Plan.

On the basis of the WICHE data on manpower and access, it appears that the region's three existing optometry schools will be able to meet the needs of the West as currently projected. Assuming that all thirteen states participated in the Plan at the level suggested in Table 3, the region would require about 800 slots in the three schools of optometry over four years (see Table 5). The enrollment capacity of the three schools is about 1,000; thus, the region would require about 80 percent of available seats. Assuming that past state-school enrollment patterns continue, the region's students would distribute fairly equally among the three schools (see Table 6).

The number of applicants has started to decrease in all health professions, including optometry. Minorities are seriously underrepresented in the profession, while women are less so (see Table 7). In order to maintain a large enough applicant pool, particularly of minorities and/or applicants from underserved areas, it is proposed that recruitment efforts be established and coordinated on a regional basis. Recruitment materials would be developed that contain information about all three schools, as well as about the WICHE Student Exchange Program. The involvement of a Regional Advisory Committee, State Coordinating Committees,

TABLE 4

PROFESSIONAL STUDENT EXCHANGE PROGRAM: OPTOMETRY
ACADEMIC YEAR 1978-1979

	Receiving School			
Sending State	Southern California College of Optometry	University of California School of Optometry	Pacific University College of Optometry	Total No. of Students
ALASKA	2	1	4	7
ARIZONA	18	-	7	25
COLORADO	7	2	9	18
HAWAII	11	2	10	23
IDAHO	6	-	10	16
MONTANA	18	-	16	34
NEVADA	14	-	3	17
NEW MEXICO	13	-	5	18
OREGON	6	1	29	36
UTAH	14	-	4	18
WASHINGTON	11	1	27	39
TOTAL	120	7	124	251

TABLE 5

ESTIMATED FOUR-YEAR STUDENT ENROLLMENT LEVELS FOR WESTERN SCHOOLS OF OPTOMETRY UNDER PROPOSED REGIONAL PLAN

School	1980	1985	1990
Pacific University College of Optometry (PACU)	212	220	233
Southern California College of Optometry (SCOPT)	204	230	271
University of California, Berkeley School of Optometry (UCB)	240	248	248
TOTAL			752

TABLE 6

EQUITABLE DISTRIBUTION OF FIRST-YEAR STUDENT SPACES BY STATE AND INSTITUTION

State	Pacific University College of Optometry	Southern California College of Optometry	University of California College of Optometry	Total
ALASKA	1	0.5	0.5	2
ARIZONA	7	3	1	11
CALIFORNIA	8	29	53	90
COLORADO	7	6	2	15
HAWAII	2	2	1	5
IDAHO	3	1	0	4
MONTANA	3	2	1	6
NEVADA	1	3	1	5
NEW MEXICO	1	5	1	7
OREGON	8	1	1	10
UTAH	1	8	1	10
WASHINGTON	14	4	1	19
WYOMING	1	3	0	4
TOTAL	57	67.5	63.5	188

TABLE 7

COMPARISON OF MINORITY ENROLLMENT IN WICHE SCHOOLS OF OPTOMETRY WITH PERCENTAGE ACTIVE MINORITY OPTOMETRISTS IN WICHE REGION (1973) AND PERCENTAGE MINORITY IN WICHE POPULATION*

Race/Ethnicity	Percent of Active WICHE O.D.'s, 1973	Percent in WICHE Region Population, 1976	Percent Enrolled in Three Optometry Schools In WICHE Region, 1977-78
Black	.3% (n = 10)	5.3%	1.2% (n = 12)
Hispanic	.4% (n = 15)	12.4%	2.7% (n = 27)
Native American	.1% (n = 4)	1.2%	.2% (n = 2)
Asian American	6.6% (n = 265)	3.1%	11.5% (n = 113)

SOURCES: Optometrists--Optometric Manpower Resources, 1973.

Minority Population Ratios--Access and Retention of Minorities in Higher Education, WICHE, 1978, and U. S. Department of Health, Education, and Welfare Survey of Income and Education, 1976.

Enrollments--American Optometric Association, Report to the House of Delegates, June 20, 1978.

*This table is taken from Vision Manpower Needs in the Western States, June, 1979.

state optometric associations, and private practitioners would be critical in this effort to identify, recruit, and retain minority students (see the discussion of Coordinating Mechanisms, p. A-28).

In order to implement the access and admissions component of the Regional Plan, two mechanisms would be necessary. The proposed Regional Advisory Committee would review current enrollment data, periodically assess the optometric manpower needs of the states and the region, provide input from each of the participating states, make recommendations to the schools regarding admissions policies, and serve as a liaison between applicants and individuals responsible for the processing of applications at the three schools of optometry. The State Coordinating Committee would provide advice about access and admissions in each state; a member of this State Committee would also be a member of the Regional Advisory Committee. A procedure could be established to allow members of the State Committee to assist in the initial application review or to provide an opportunity for the applicant to be interviewed in his or her own state.

B. Curriculum Model and the Development of a Cooperative Network of Off-Campus Clinical Training Sites

The first year optometric curriculum includes specialized coursework, requiring special equipment and staff, in addition to the basic science coursework. Without a need to expand enrollments, decentralization of the basic science instruction would result in under-utilization of existing facilities and unnecessary duplication of equipment and staff at other sites.

Decentralization of the clinical curriculum during the fourth year appears desirable, however. Each of the schools has already developed some extramural clinical sites. Although these sites are often of inconsistent quality, they provide needed clinical materials, as well as exposure to different practice settings.

This program feature addresses several objectives of the Regional Plan. These clinical training sites will help encourage optometry students to practice in underserved areas, will improve the quality of vision services available to the public, and will improve the quality of students' educational experiences.

It is recommended that: 1) at least one clinical site be established in each participating state, and 2) that the three schools should cooperate in the operation of these clinics and in the placement of students. It has been much easier for schools to send students to off-campus training sites that are close to the campus. This trend has helped to encourage students to set up practice in that area with which she/he is most familiar; that is one reason that Oregon and California have such favorable ratios of optometrists.

The three optometry schools within the WICHE region will have the responsibility for the establishment and maintenance of at least one clinical training site in each participating state in the region. Because of the cooperation among the schools, each of the institutions would assume responsibility for clinic site development in only about five of the thirteen western states. Students from a particular state would be required to return to their home state or to another underserved area for at least one clinical rotation and, in some cases, for most of their off-campus clinical assignments. It is believed that this will increase the likelihood of students beginning practice in these locations. A cooperative agreement would be developed between the schools that would permit students attending any of the three schools to obtain some of their clinical training in a clinic in their home state--no matter which school maintained that clinic.

Although optometrists tend to distribute more evenly than do physicians, there is a marked maldistribution of optometrists within the region. The Regional Plan would encourage the schools to work with the states (health departments, health systems agencies, and optometric associations) to identify underserved areas or populations. Geographically underserved areas may include remote rural areas or inner city, low income census tracts. Underserved populations may include minority groups, those with learning disabilities or other handicaps, and the elderly.

Our population is rapidly becoming more aged; the more aged the individual the greater is his or her need for vision care. During the mid-forties, loss of elasticity of the lens (presbyopia) makes reading more difficult and reading glasses are usually required. At this age, the incidence of glaucoma, cataract, and other degenerative diseases begins to increase. During the sixties and seventies, vision problems become more common, more severe, and more debilitating. There are thousands of older people in the region who suffer with poor vision, when adequate treatment could bring them near-normal vision.

Low vision care--which could help many elderly function more independently--is not easily accessible in many areas of the West. There are only about 43 cities in the entire United States which have facilities providing comprehensive low vision care, and the majority of these facilities are open only one day a week. This kind of care is generally not provided by private practitioners because they lack specialized training and equipment; in addition, providing this kind of care can be time-consuming and tedious. Therefore, low vision clinics are the main source of care to patients who need this kind of service. The low vision clinic established cooperatively by the Southern California College of Optometry with the State of Nevada could serve as a model for other states; it provides a learning center for students as well as needed care to patients.

While the projected increase in the need for vision care in the region can be greatly attributed to a simple increase in the size of the population, there are some states where the aging of the population will significantly affect the need for services. Arizona, for instance, is projected to increase its need for optometric services by more than ten percent by the year 2000 simply because of the increased proportion of aged in that state.

Another drastically underserved group in the West is children with learning disabilities. These problems require multidisciplinary intervention. If appropriate care is not given, the development of the child's potential may be seriously limited. While it is very difficult to know precisely how many of these children in the West do not receive adequate care, it is certain that the cost of this unmet need to society is great.

The development of well-supervised, off-campus clinical training programs can provide valuable learning opportunities for students. Often the clinics operated at the schools provide exposure to a homogeneous, basically healthy patient population. In a "real life" setting, the student is confronted with a larger number of patients, a greater variety of types of people, and a larger variety of health problems.

In addition, the student will be exposed to different types of practice models--for instance, the health maintenance organization setting. Many of the clinical training sites will provide students an opportunity to work in a multidisciplinary setting--perhaps learning how to interact with the family physician or an ophthalmologist. At the same time, these training sites can help provide vision care to people who may not otherwise receive care.

The schools have already developed a number of clinical training sites through the region (see Appendix C). These clinics provide educational experiences for the students as well as vision care to patients. These clinics, along with the new ones designed to meet the needs of the region and the participating states, would comprise the off-campus network. Only four states have no active outreach clinic: Idaho, Utah, Wyoming, and Montana.

In addition to providing education experiences and patient care, the off-campus clinics could:

1. Make available the consultative resources of the three schools of optometry to state and local governments, departments of health or education, for example, and to other organizations, such as consumer groups, research foundations, and educational institutions.
2. Provide an organizational base from which to recruit minority students.
3. Provide a base from which to develop advanced educational or residency programs at appropriate clinical locations, particularly clinically-based continuing education programs, to help ensure the clinical competence of practitioners.
4. Foster the cooperative exchange of students and faculty in the various clinical training programs. This exchange would provide a broader range of learning experiences for both students and faculty.
5. Provide vision care practitioners in the various areas with a referral site for unusual cases needing specialty services, as well as consultative services in individual problem cases.

Policy and operational problems involved in developing a cooperative clinical network will be resolved by appropriate representatives of the colleges. The operation of the network will rest with the colleges. State and Regional Coordinating Committees will provide advice and guidance to the schools about state and regional needs relative to the operation of the network.

C. Manpower Program

One of the most important objectives of the Regional Plan is to ensure an adequate, appropriately distributed manpower supply. There is a serious maldistribution of optometrists within the region. One state has 15.1 optometrists per 100,000 population, whereas another has only 6.7. Furthermore, projections show that this maldistribution will persist if no policy changes are implemented. In addition, minorities are dramatically underrepresented among practicing optometrists as well as among optometry students.

Career guidance and recruitment of qualified students, including females and minorities, would be a vital part of the program to ensure appropriate representation of all ethnic and racial groups and also to ensure an adequate future supply of optometrists in each of the western states. These activities would be coordinated with the state optometric associations. The decentralization of clinical sites provides an opportunity to encourage minority students to enter the profession. A regional program would provide visibility to the optometry profession and the opportunities for optometric education in the West; this visibility would help generate sufficient numbers of qualified applicants to improve the current maldistribution of optometric practitioners.

A decentralized network of clinical placement sites will provide an important basis for the manpower program. A stronger relationship between the schools and representatives of optometry would lead to a coordinated and continuous effort to facilitate the return of graduates back to their sending states or to other areas needing optometrists. Optometric associations and practitioners could provide assistance and guidance to students pursuing the professional degree program. In addition to providing externship placement opportunities, practicing optometrists could identify potential clinical training sites and assist in developing clinical programs that would serve areas of unmet vision care needs within the state(s), whether in the private or public sectors.

Although each optometry school now has a method of assisting new graduates to find a place to practice, the practice selection process could be significantly improved. A coordinated program that would involve the entire region and all three schools would enhance the placement process. Emphasis would be given to assisting the graduate from a particular state to return to the sending state and/or to other areas of unmet need to provide vision care. Such a service would assist the new graduate, as well as the active or retiring practitioner who is in need of an assistant or associate.

Specific components of the manpower program would include:

- Cooperation among the existing recruitment and placement activities of the three colleges;
- Linkage between the colleges and optometric professional organizations in each of the states;
- Use of the National Health Professionals Placement Network, based at the University of Minnesota, or a similar data-based

system, to provide graduating students greater access to information about communities needing optometrists; and

- Development of student materials about how to select a practice site (e.g., available sources of data, how to evaluate data, indicators of need, whom to contact, etc.).

The thrust of the manpower program is to increase information sharing and to make future practitioners more aware of where their services are actually needed. Individual states may wish to explore specific incentives to encourage practitioners to locate in serious shortage areas. However, increased access to information at a regional level should contribute to the solution of the maldistribution problem.

D. Institutional Resource Sharing and Improvement in the Quality of Education

One of the stated objectives of the proposed regional program is the enhancement of the quality of optometric education within the western states. This objective is addressed by several program elements, including the institutional resource sharing component. In general, this component is envisioned as newly developed, formalized interaction among the schools to improve the quality of education. Specifically, institutional resource sharing would include the following five activities:

1. Development of common learning resource materials,
2. Implementation of a joint faculty development program,
3. Coordination of graduate student recruitment,
4. Coordination of library services, and
5. Development of advanced educational programs for practitioners.

Development of Common Learning Resource Materials

During the implementation phase of the regional program, teaching and evaluation materials will be developed for the off-campus clinical sites.

Rather than each site developing its own independent learning resources, the schools will cooperatively develop the required instructional materials. The necessary learning resources would include items such as instruction guides, audio-visual aids, model case analyses for small group seminars, on-site reference resources, and clinical evaluation tools.

Prior to developing the learning resource materials, the clinic directors and faculty members from the three schools need to review the existing outreach programs to determine their similarities and differences. After this review, a teaching model will be selected for implementation at those sites which may accommodate students from all schools. Once the model has been selected, the clinic directors or faculty will develop the learning resources to support the mixture of seminars, self-study, and clinical work that will occur at these sites.

The process that is used to develop materials for the outreach clinics will establish an operational model that may extend to other areas of the curriculum. In future years, common resource material could be developed or exchanged for selected courses. Such efforts reduce duplication, facilitate information exchange, and increase the resources available to a faculty.

Implementation of a Joint Faculty Development Program

Once the off-campus clinical sites have been selected, faculty will be hired to staff these clinics. In order to assure that these teaching programs operate in a parallel fashion, the clinical faculty will participate in an annual orientation and development program. This program will be presented by the clinic directors and faculty of the three colleges and will be one or two days in length.

Initially, the program's objectives will focus on informing the outreach faculty of their teaching and evaluation responsibilities relative to the schools' curriculum. Future programs, however, will focus on knowledge acquisition and skill development. The subject matter will be selected to improve both clinical and teaching skills of the outreach clinic staff. In addition, these annual meetings will serve as a valuable management tool for coordinating the activities of the many outreach clinics.

In future years, the faculty development for the clinical faculty could be expanded to include faculty from other curricular areas. An annual program would facilitate exchange among the three schools and lead to overall curriculum improvements. Such a program would prove especially beneficial to new faculty members. Complementary to an annual instructional conference, short-term exchanges of faculty could be arranged to allow faculty to pursue development activities not available at their institution. These exchanges may permit coordination of research, development of joint proposals, and interaction with recognized experts in one's field. Faculty could undertake some teaching responsibilities during these exchanges which would broaden the education of the students at participating institutions.

Coordination of Graduate Student Recruitment

Each of the three existing institutions offers some form of graduate education. These programs are essential for the development of faculty and practitioners for secondary and tertiary care. Highly qualified students from all three schools should be encouraged to enter the doctoral program at the University of California, Berkeley, School of Optometry. Qualified students in the region's schools should also be encouraged to enter the residency program at the Southern California

College of Optometry and the master's program at the Pacific University College of Optometry. The recruitment of students into such programs can be facilitated by the development of a brochure outlining all of the graduate education opportunities offered by the three schools. Information can also be disseminated through individual and group sessions between faculty and students from different schools. These sessions could probably be arranged with minimal additional costs if coordinated with scheduled regional program travel for faculty or administrators.

The regional program can also facilitate the development of new graduate programs. It would appear that the regional program could serve as a vehicle to coordinate the development of residency programs within the western states. A residency program affiliated with all three western schools could utilize resources from all institutions and at the same time eliminate the competitiveness and duplication that sometimes develops in such activities.

Coordination of Library Services

The western states' optometric literature needs can better be served with a more formal library arrangement with the three western educational optometric institutions. Many health science personnel in states without a visual science educational center are unable to fill their information needs. Libraries' acquisition lists of new books might be helpful. New audio visuals available on vision and new journals which have recently been published are all areas in which visual scientists could find needed information. Reference questions can be answered immediately over the telephone or, if more complicated, through the mail. Bibliographies could be compiled and literature searches done by computer terminal. Current research results will be available more quickly to the practicing optometrists.

The libraries of Pacific University, University of California, Berkeley, and Southern California College of Optometry cooperate in some ways already. The Association of Visual Science Librarians brings together libraries interested in visual science. Its annual meeting gives them an opportunity to discuss mutual problems and solutions each year. During the last meeting, the agenda included papers on indexing in visual science, library collection policies, acquisition approval plans, standards and accreditation, and SCCO's media resources project.

During 1979, a supplement to the Union List of Vision-Related Serials was completed and will be available to all participating libraries. The Union List enables the librarians to ask for material in another library through interlibrary loans which otherwise might be difficult to locate. In addition to journal articles, books or theses may be borrowed on the same interlibrary loan agreement.

Development of Advanced Educational Programs for Practitioners

Through the regional program, the three schools will cooperate in delivering educational programs for practitioners. These may take the form of current continuing education offerings, clinical residencies, structured individual study, or advanced clinical training. The latter concept is of particular importance with respect to the regional program. The clinical training sites established within the participating states can provide the facilities for clinical education programs for practitioners. Such programs could be designed to upgrade the general skills of practitioners or teach new clinical techniques. Programs could be intense in nature and structured for small groups. The clinic staff and/or visiting faculty would serve as instructors, and cost savings could be incurred by utilizing these resources during nonacademic periods.

Also, practitioners who served as part-time instructors in the outreach clinics could benefit from the structured faculty development programs discussed above. While professional student education is one purpose of the outreach clinics, another is to extend the advanced educational opportunities of the colleges into the community.

The above five activities are but some of the programs that can result from structured interaction among the three schools. Most likely other areas will be investigated as the regional program is implemented. Whatever activities are pursued, the adoption of a regional approach can greatly improve the quality of optometric education when compared to plans where each institution operates its own independent programs. Furthermore, the desired results will be obtained at a lower cost through a regional program of resource sharing.

IV. Flexibility of the Plan

It is acknowledged and respected that each of the schools of optometry has different strengths and that each of the western states has unique needs. This Regional Plan addresses the problem of educational access, improved quality of education, the return of graduates to the sending state, optometric manpower maldistribution within the states and the region, continuing education, and other services provided to the sending states.

The state reviews of the Regional Plan showed that the states differ in the way they view the pros and cons of the Plan (see Appendix D). The State Coordinating Committee would review the particular needs of each state and help determine how the Plan should be implemented.

The states will have some options within the basic Plan. One series of options may be developed around the type of clinical training site needed in that state. A state may identify a particular need for vision care which the school(s) in concert with the state optometric association could meet.

Another option may be to develop a state optometric educational center, either freestanding or within the state's university system, that could coordinate the state's optometric educational activities. These centers could be primarily responsible for evaluating the continuing educational needs of the optometrists and their paraoptometric personnel, developing and arranging programs to meet those needs, and maintaining transcripts of continuing education credits. The centers could also coordinate preprofessional curricula within the state's undergraduate institutions, provide pre-optometry counseling services, coordinate and act as liaison to the schools on matters of career guidance and admissions, and operate a placement service for the state. The educational center could also maintain a liaison role between licensed optometrists and educators. A state optometric educational center, in concert with a Regional Advisory Committee, could be responsible for ensuring that the regional program is responsive to the needs of the state. It is recognized that in some states this concept may not be appropriate; however, a series of options would allow for the basic Plan to be modified to meet individual state needs.

V. Coordinating Mechanisms

Because of its unique role in linking the thirteen western states with the three optometry schools in the region, the overall administration of the Regional Plan would be supervised by WICHE. It will be WICHE's role: to convene the Regional Advisory Committee; to work with the three schools to arrange for the equitable allocation of students' positions;

to establish student support fees; and to work with states to establish support levels. During the implementation of the Regional Plan, WICHE will also work closely with the School Coordinating Committee and help to establish the State Coordinating Committees. Curriculum matters will clearly be within the domain of the participating colleges of optometry.

Coordination of the program will take place at three different levels: at the school level, at the state level, and at the regional level.

A. School Coordinating Committee

In terms of actual implementation and operation of the Plan, the coordination of the schools of optometry participating in the Plan will be crucial. While the basic decision to join the Regional Plan may rest with high level administrators, practical and procedural decisions will be made by faculty who actually run the educational programs. Each of the participating schools should appoint one faculty/administrator who will be responsible for the coordination of all regional program activities within the school. This person will also serve on the School Coordinating Committee and the Regional Advisory Committee. The School Coordinating Committee will be composed of representatives of all the participating schools as well as a representative of WICHE. This Committee will appoint subcommittees as appropriate to help resolve policy and procedural issues; for instance, a subcommittee of clinic directors may be appointed to advise on curricular and evaluation policies related to the clinical site network. This Committee will receive advice about policy and procedural issues from the Regional Advisory and State Coordinating Committees.

B. State Coordinating Committee

This Committee will be responsible for the implementation and coordination of the regional program within a state. In addition, the State Committee will provide information about the state's needs to the Regional Advisory Committee and to the schools of optometry. The role of this Committee could vary from state to state.

The composition of this Committee in each participating state will include representatives from the following:

1. State optometric association,
2. Legislative or administrative branches of government,
3. State higher education executive officer or other appropriate person,
4. WICHE Certifying Officer, and
5. State health department or health systems agency.

The Regional Advisory Committee will determine the method of selection of the members of the State Committees. One member of the State Committee will represent the state on the Regional Advisory Committee.

The State Committee would organize and/or participate in the following activities:

1. Career guidance and recruitment of qualified applicants,
2. Assist schools in the admissions process,
3. Cooperate with manpower aspects of Plan--by identifying areas of unmet needs, establishing clinical placement sites, and assisting in graduate placement,
4. Ensure continued support of Plan by the state,
5. Communicate to appropriate agencies, institutions, and/or groups regarding the Plan, and

6. Assist in implementing the continuing education component of the Plan.

C. Regional Advisory Committee

The Regional Advisory Committee* will be composed of representatives of participating schools and states and WICHE. This Committee will provide the overall coordination among states and schools and generally supervise the Plan. This body shall have procedural and policy making responsibilities and would make amendments to the Plan as appropriate. Matters affecting the schools would have to be ratified by the participating schools. Matters affecting the states would have to be ratified by the appropriate state agencies. Access to education would be achieved by legislative action in individual states, and the three schools collectively would guarantee a minimum number of slots to qualified students (as described under Access and Admissions earlier in this document).

The following are some of the policy areas for which the Committee will have responsibility:

1. Make recommendations to the WICHE Commission about support fees and levels,
2. The allocation of admissions,
3. The selection of clinical sites, and
4. The evaluation of the Plan.

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*This Regional Advisory Committee will follow the policies and procedures as established for the WICHE Regional Advisory Council on Veterinary Medicine.

VI. Future of the Plan and Phased Implementation

Although participating states could assume the costs of operating the Regional Plan, outside funding would be required to develop the proposed new program elements. It has been recommended that the Plan should be implemented over a period of three years; at the end of that time, costs of operating the Plan would become part of the standard cost of education.

During the first phase of implementation, all three coordinating mechanisms (the School Coordinating Committee, State Coordinating Committee, and Regional Advisory Committee) would be established and begin to meet. In fact, the WICHE Commission has already authorized (June, 1980) the creation of a Regional Advisory Committee.

It has been proposed that some initial activity be undertaken to implement each major program component of the Regional Plan during year one of implementation (see Table 8). Most of the Plan would be in place by the end of year two. The cost of developing these program activities follows Table 8, in the section on Financial Plan and Costing Methodology. Operational costs have been estimated at $200 to $400 per student per year. These costs would, however, be finally determined when the total Plan is finally operational.

The operational costs of the Regional Plan would be calculated according to the methodology used by WICHE to determine the fees charged to states under the Professional Student Exchange Program. New costing studies are conducted every two years. The next study will be conducted in the spring of 1982; these new fees would be put into effect in academic year 1983-84. If the components of the proposed Regional Plan were in place by Spring of 1982, the states would begin paying operational costs of the new program in academic year 1983-84.

TABLE 8

PHASED IMPLEMENTATION OF REGIONAL OPTOMETRY PLAN

Program Features of the Regional Plan	Year 1 (1980-81)	Year 2 (1981-82)	Year 3 (1982-83)
ess and Admissions	• Determining role of State Coordinating Committees in recruiting and interviewing students. • Efforts undertaken to adjust states' support of optometry students. • Development of cooperation among three schools in recruiting students, particularly in recruiting minority students; cooperative efforts would involve developing common materials for distribution to applicants, schools, and counselors.	• Implementation of a coordinated regional plan for recruitment. • Implementation of a coordinated minority recruitment program.	
erative Network of -Campus Clinical ning Sites	• Schools begin to place students from other regional schools in existing clinical sites, as space is available. • Involving State Coordinating Committees in identifying potential sites for future development. • Schools establishing appropriate relationships in the states to explore future site development. • Developing a role for State Coordinating Committee in examining existing off-campus clinical sites. • Development of learning resource materials for use by 3 schools in clinical sites.	• Implement proposed plan to return students to home state for clinical placement--all 3 schools cooperate by using existing sites. • Identification of specific sites; development of plans and of appropriate agreements in order to establish new clinical sites. • Development and implementation of training for off-campus clinical faculty. • Implementation of plans to develop new clinical sites.	• Full operation of clinical sites in all states.

TABLE 8

PHASED IMPLEMENTATION OF REGIONAL OPTOMETRY PLAN
(Continued)

III. Program Features of the Regional Plan	Year 1 (1980-81)	Year 2 (1981-82)	Year 3 (1982-83)
C. Manpower Program	• Three schools share information about manpower needs and practice opportunities in the region. • Schools develop stronger linkages with state optometric associations and State Coordinating Committees in order to identify placement opportunities. • Initial development of computerized regional data base to help match students with potential practice opportunities.	• Development of materials to help students evaluate potential practice sites. • Continued development of computerized regional data base.	
D. Institutional Resource Sharing	• Continuing education directors of 3 schools review existing resources and current way in which programs are delivered; recommendations made about ways to coordinate resources to improve delivery of continuing education to states, e.g., strengthening of clinically based continuing education offered in clinical training sites. • Schools develop mechanism to work more closely with state associations in identifying continuing education needs. • Formal coordination of library services of 3 schools. • Development and implementation by 3 schools of training for off-campus clinical faculty.	• Implement cooperative continuing education programs in response to state association needs. • Development of cooperative mechanism to funnel students into graduate programs.	

In some states legislative action would be required to increase the number of students supported by the state, in order to meet that state's projected needs for manpower and educational access. This activity would be planned and undertaken by members of the State Coordinating Committee, in coordination with the legislative schedule in each state (see schedule in Appendix E).

This Regional Plan would facilitate the cooperation of existing institutions, both public and private, in meeting the diverse needs of the WICHE states. If successful, this Plan could provide an innovative model for other health professions and for other regions grappling with problems of manpower and educational access. The decade of the 1980's will clearly be an era where better use must be made of existing resources; the West can help show the value of regional cooperation.

VII. Financial Plan and Costing Methodology

Integral to the implementation plan is the financial plan by which the full cost of the regional optometric programs will be equally shared by participating states. The financial plan presents a five-year budget projection and a costing methodology which will permit an equitable sharing of costs among the participating states.

The budget projection contains three elements:

1. The ongoing costs of the existing professional degree programs of the three schools,
2. The costs for planning, developing, and evaluating the new program elements to be implemented under the Regional Plan, and
3. The ongoing costs of the new program elements after the implementation phase is completed.

The ongoing costs of the existing programs were established using a costing methodology developed for the WICHE Professional Student Exchange Program and used since 1977 in setting the per-student fees used in that program to reimburse the "receiving" schools for their net costs in educating students from the "sending" states. The actual per-student costs in 1978-79 for each of the three schools were weighted by the number of students enrolled through the Professional Student Exchange Program to determine a weighted average cost of educating these students in 1978-79. This figure was then projected forward for five years, using an inflation rate derived from a national cost of higher education index. A factor for use of facilities was included, based on historical cost of facilities and fifty-year life, which is consistent with federal indirect cost guidelines. In this budget projection, it is assumed that services comparable to those now realized as contributed services will continue to be available on a contributed basis in the future, and they are not included in the five-year budget. The resulting projected per-student cost figures represent, in per-student terms, the five-year budget for the ongoing costs of the existing professional degree programs of the three schools combined.

The costs for planning and developing the new program elements to be implemented under the Regional Plan are projected in detail in Appendix F. These costs are broken down into three annual budgets, consistent with the phased implementation schedule.

Appendix G shows projected ongoing costs of the new program elements of the Regional Plan in years four and five, after the three-year implementation period. By translating into an annual per-student amount, this part of the budget can be combined with the per-student cost of the existing program.

These elements are combined into a five-year budget, which is shown in Table 9.

The costing methodology, which will permit an equitable sharing of costs among the participating states, is based on the methodology developed and used for the past several years by the WICHE Professional Student Exchange Program. As such, it is understood and accepted by the states which will be participants in the regional optometry program. Its principal features are:

1. A net per-student operating cost is determined for each receiving program in a given professional field of exchange. Total operating cost of the professional degree program is reduced by clinic income, federal capitation funding, etc. The net figure is divided by the total enrollment in the program to obtain a per-student amount. From this per-student amount, the amount of tuition paid by the exchange student is subtracted.

TABLE 9

SUMMARY OF PROJECTED FIVE-YEAR BUDGET

ON-GOING COSTS IN PER-STUDENT TERMS
(Approximately 1,000 Students in Three Schools)

	FY 1981	FY 1982	FY 1983	FY 1984	FY 1985
Cost of Existing Professional Degree Programs (see Appendix F)					
Operational	$5,819	$6,238	$6,687	$7,168	$7,684
Facilities	59	59	59	59	59
Total	$5,878	$6,297	$6,746	$7,227	$7,743
Ongoing Costs of New Program Elements of Regional Plan After Implementation	--	--	--	206	206
TOTAL ONGOING	$5,878	$6,297	$6,746	$7,433	$7,949

PLANNING, DEVELOPMENT, AND EVALUATION OF NEW PROGRAM ELEMENTS OF REGIONAL PLAN
(Cost Summary for Implementation)

	Year 1	Year 2	Year 3
A. Colleges of Optometry			
PUCO	$ 82,725	$ 76,138	$ 48,700
SCCO	93,947	86,949	55,534
UCB	75,275	68,960	53,778
B. Outreach Clinics	4,550	384,050	211,550
C. Placement Network	17,155	14,855	0
D. State Coordinating Committees	19,500	19,500	19,500
E. Regional Advisory Committee	13,300	13,300	6,650
F. WICHE Administrative Costs	76,392	59,832	59,832
G. Newsletter	11,000	11,000	11,000
TOTAL	$393,844	$734,584	$466,544

2. The final net per-student amount in 1. for each program is weighted by the number of exchange students enrolled to arrive at a weighted average per-student amount.
3. This weighted average amount, based on the most recent year's actual financial statements, is projected forward and then used as the basis for the common per-student support fee to be paid to every receiving program in that field of exchange for each exchange student.
4. A per-student amount for use of facilities is added to the figure determined in 3. above.
5. A particular amount for each fiscal year is established, and the amount is adopted two to three years in advance, so that it is known at the time appropriation requests for the year concerned are initially proposed.

In applying this costing procedure to the regional optometry program, the following points were considered:

1. The existing programs of the three schools, and those new elements of the Regional Plan for which ongoing costs are projected, are equally beneficial to all students enrolled, whether they are residents of the states participating in the regional program or not. Therefore, those costs are appropriately charged to all students, to be paid partly by the student as tuition and partly by the home state in the case of students from participating states, and by the student with or without the assistance of some third party in the case of other students.
2. There is no practical way to standardize the amount of tuition to be paid at all three schools by students from the

states participating in the regional program. The schools have differing levels of per-student costs and differing relationships to the institutions or state system to which they relate. The WICHE Professional Student Exchange Program uses an approach which is judged to be reasonable and acceptable to states, students, and institutions. An exchange student attending a public institution is charged resident tuition, and one attending a private institution is charged one-third of full, regular tuition. This is judged a reasonable approach for the regional optometry program.

3. The mechanism used by WICHE has been repeatedly considered in depth, and has been refined from time to time. It is known to the states and institutions which will participate in the regional optometry program, and inclusion of the costs of the new features of the Regional Plan will fit smoothly into the regularized procedures of the existing mechanism.

The State Coordinating Committees and the Regional Advisory Committee will provide regularized channels for states and institutions to participate in the consideration of the amount of the support fee and to express any concerns they may have about the costing procedures and other aspects of the WICHE support mechanism.

The budget figures presented above show projected weighted average per-student costs (prior to the subtraction of the amount of tuition to be charged the student). The actual setting of the per-student payments for future years will be based on periodic surveys of actual costs, including actual costs of the new program elements once they have been implemented.

APPENDICES TO

IMPLEMENTATION OF THE PLAN TO REGIONALIZE OPTOMETRIC EDUCATION IN THE WEST

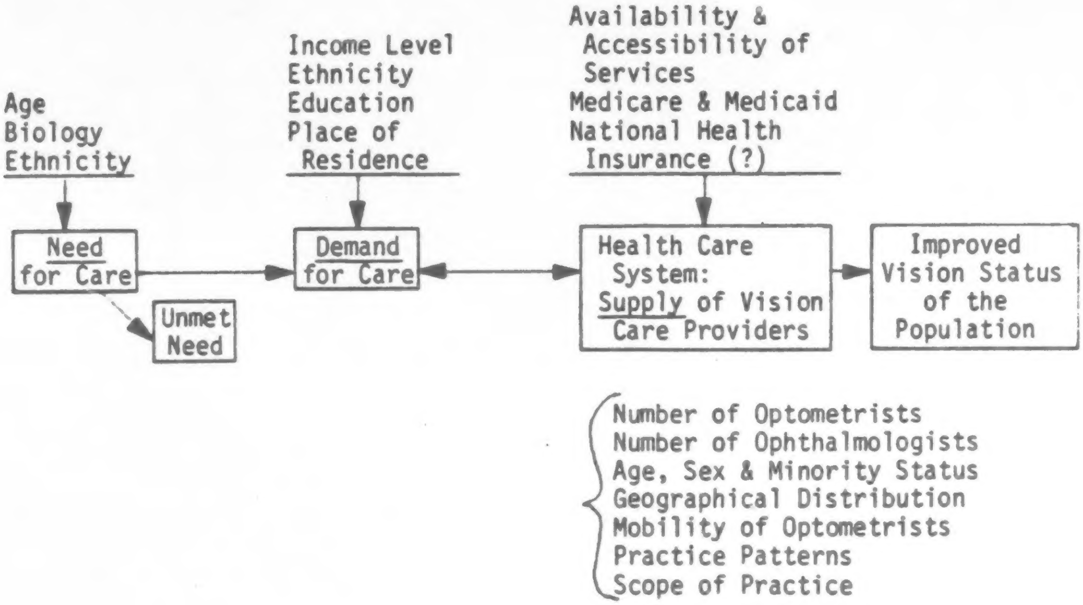
APPENDIX A

EXECUTIVE SUMMARY *

This manpower report has been written to satisfy, in part, a contract designed to develop a regional program for optometric education in the western United States. The regional plan will provide adequate training opportunities for residents in the western states, as well as help to direct graduates into underserved areas in the region.

The report contains a compilation and assessment of existing optometric manpower supply data for the thirteen western states. By provision of this contract, no primary data were collected. Available data sources used include: the Bureau of Health Manpower and the National Center for Health Statistics (USDHEW), the American Optometric Association, state optometric associations, the colleges of optometry, and the Western Interstate Commission for Higher Education. This report provides the best possible estimates or projections of the supply of optometric manpower for each state in the West from 1980 to the year 2000. It contains the student enrollment levels projected to be necessary for each state to assure certain levels of manpower supply in the year 2000. In contrast to previous manpower reports, this study includes data on the mobility of optometrists as well as data on the distribution of both optometrists and ophthalmologists by county for the region.

In addition to presenting data on the supply of vision care providers, this report also summarizes issues relating to the need and demand for vision services, as depicted in the following figure.


Age
Biology
Ethnicity
Income Level
Ethnicity
Education
Place of Residence
Availability & Accessibility of Services
Medicare & Medicaid
National Health Insurance (?)
Need for Care
Unmet Need
Demand for Care
Health Care System: Supply of Vision Care Providers
Improved Vision Status of the Population
Number of Optometrists
Number of Ophthalmologists
Age, Sex & Minority Status
Geographical Distribution
Mobility of Optometrists
Practice Patterns
Scope of Practice

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*Executive Summary from Vision Manpower Needs in the Western States, June 1979.

Vision problems are among the most disabling to the individual and the most expensive to society. Over half of the total population reports they have had trouble seeing. In addition, over half wears corrective lenses. Vision problems are chronic and developmental; as one ages, care is needed with increased frequency. As the population becomes more aged, this will result in an increased need for vision services. Some states, like Arizona, will experience a significant increase in need because of this aging.

Within the region, there is evidence of an unmet need for vision care. The West as a region has the greatest proportion of persons with very poor vision (20/50 or less). It is estimated that 56 percent of this group (about 921,000 citizens) could see better with proper refractive care. Furthermore, there are about 14,000 people in the region whose blindness could be prevented or cured. These are only two gross indicators of unmet need; there are many more people in the region with less serious problems who could also benefit from proper care.

The need for care reflects the services which should be provided to meet the actual requirements of the population. Demand reflects how many services people really use. Demand is affected by characteristics of the consumer (e.g., education and income) as well as characteristics of the services (for instance, availability and cost). Minority groups appear to be the most easily identified groups which under-utilize vision services.

Optometrists deliver a major amount of primary vision services and often serve as an entry point into the health system; they play a crucial role in prevention and in the early detection of serious problems. Trends within the profession include specialization, group practices, and the growth of third-party payment mechanisms. Many states have recently enacted laws which allow optometrists to use diagnostic drugs.

Most of the vision services needed in the population relate to the basic vision examination and the correction of refractive error. Optometrists and ophthalmologists overlap in their abilities to perform these services. Thus, it is clear that any useful analysis of vision manpower needs must include data on both of these professions. Policy makers who are deciding how many of various types of providers will be needed in the future must resolve the questions about cost and quality cited by this report.

For the WICHE region, the supply of optometrists has increased; in 1973, the ratio of optometrists was 10.9 per 100,000 and in 1978 it was 11.4. There is, however, a serious maldistribution of optometrists within the region. Eight states currently have ratios well below the regional average: Alaska, Arizona, Colorado, Hawaii, Nevada, New Mexico, Utah, and Washington. Even when ophthalmologists are taken into account, the same eight states appear below average in their supply of vision manpower. Furthermore, manpower projections show that a maldistribution of vision care providers will persist to the year 2000 if present trends continue. Some states will have a very low supply (Colorado and Utah) and some states face a possible oversupply (Montana, Wyoming, and Hawaii).

The model used to generate the manpower projections in this report allows for migration by both practicing and newly graduated optometrists. Attrition from death and retirement is figured on the basis of age-specific probabilities, and these numbers are subtracted from the manpower pool. New

graduates are added to the pool. A range of projections was generated by changing assumptions related to student enrollments and the in-migration of optometrists.

Two sets of manpower projections have been produced for each of the thirteen states. One set is based on the assumptions that all students who attend optometry school return to their home state and that no in-migration of optometrists occurs; these assumptions yield a low estimate of future supply. The second set of projections assumes that students return at the current observed rate and that migration continues; this method produces a high estimate.

Chapter VI provides a summary of these projections and other manpower data for each state. Based on manpower needs, it may be appropriate for some states to re-examine their policies relating to the support of optometry students.

There are three schools of optometry in the western region: the Pacific University College of Optometry, Southern California College of Optometry, and the University of California, Berkeley, School of Optometry. The total enrollment capacity of these schools is about 250 per year. If the eight states currently low in optometric manpower wished to reach the regional average and the high states wished to maintain their supply, capacity of these three schools could more than meet the region's need. Based on projected manpower needs, it does not appear that any new schools are needed in the West at this time.

In addition to manpower needs, states are also concerned with educational opportunity or the access which students have to professional education. Regionally, student access to optometric education is slightly above the national average. However, states such as Alaska, Arizona, and Colorado have relatively low opportunity in comparison to states like Montana and. more recently, Wyoming. Surprisingly, the eleven WICHE states without optometry schools have recently enrolled more students relative to population than the two states with schools.

Other characteristics of optometrists are also examined. Several years ago, the age distribution of optometrists was skewed to the high end; it now appears that the supply of young, new graduates will be offsetting those leaving practice. Women and minorities are severely underrepresented among practitioners. Although enrollment figures show steady improvement for women, minority groups do not show similar gains in the profession. In terms of urban-rural distribution, optometrists are much more likely than physicians to locate in non-urban areas.

There are a number of factors which could affect the demand for optometric services. The enactment of national health insurance could increase the demand for care among those who need it. Legislation which provides care for special groups could also generate increased demand. In addition, new means of diagnosis and treatment could result in a greater need for optometrists. The uncertainty of these issues makes it difficult to predict precisely what the real demand for optometric services will be in the future.

The goal of any manpower policy should be to meet the needs of the patient population. Providing a supply of providers is only part of the means necessary to improve the vision status of the population. By presenting both data and relevant issues, it is hoped this report will be useful to planners of higher education and health policy makers.

APPENDIX B

REPRESENTED AT THE STATE REVIEW

State	WICHE Commissioners	Advisory Committee Members	SHEEO's State Education Agency	State Legislators	Legislative Staff	Executive Staff	State Optometry Associations	Optometry School Representatives	WICHE Staff	Health Department or HSA or SHPDA	Certifying Officer	Other
Alaska	X	X	X	X	X	X	X		Phil Sirotkin	X	X	Pat Saiki, Hawaii State Senator
Arizona		X					X		Susan Klein		X	
California	X	X	X		X		X	Dick Hopping (SCCO) Darrell Carter (U of CA)	Phil Sirotkin Susan Klein	X		
Colorado		X	X		X	X	X	Wid Bleything (PU)	Phil Sirotkin Bill McConnell Gloria Jimenez			
Hawaii	X	X		X			X	Wid Bleything (PU)	Susan Klein	X		Optometry Student
Idaho	X	X	X	X	X	X	X	Larry Clausen (PU)	Phil Sirotkin Susan Klein Bill McConnell	X	X	
Montana	X	X	X	X			X	Larry Clausen (PU)	Susan Klein	X	X	President, Montana State University WAMI, Montana State University
Nevada	X	X		X	X	X	X	Dick Hopping (SCCO)	Bill McConnell	X	X	Bureau of Services to the Blind
New Mexico	X	X	X		X	X	X	Dick Hopping (SCCO)	Bill McConnell	X	X	Public School Finance
Oregon	X	X	X	X			X	James Miller Wid Bleything (PU) Larry Clausen (PU)	Bill McConnell	X	X	
Utah	X	X	X	X	X	X	X		Phil Sirotkin Susan Klein		X	
Washington	X		X	X	X	X	X	Wid Bleything (PU) Larry Clausen (PU)	Phil Sirotkin Susan Klein	X		
Wyoming	X	X	X				X	Larry Clausen (PU)	Phil Sirotkin	X	X	

APPENDIX C

EXISTING CLINICAL SITES IN THE WICHE STATES USED BY SCHOOLS OF OPTOMETRY

State	Optometry School	Clinic Site	Population Characteristics
ALASKA:	Southern California College of Optometry	Alaska Native Medical Center Anchorage, AK	Public health service facility serving Native Alaskans
ARIZONA:	Southern California College of Optometry	Fort Defiance Tuba City Chinle Kayenta Many Farms Winslow Teec Nos Pos	Public Indian Health Service facilities serving the Navajo area
		Keams Canyon Parker Peach Springs Phoenix Sacaton San Carlos Whiteriver Yuma	Public Indian Health Service facilities serving the Phoenix area
CALIFORNIA:	Southern California College of Optometry	Fullerton Care Convalescent Hospital Fullerton, CA	Serves elderly patients
		Sherman Indian High School Health Center Riverside, CA	Serves 700-800 American Indian resident students

APPENDIX C

EXISTING CLINICAL SITES IN THE WICHE STATES USED BY SCHOOLS OF OPTOMETRY
(Continued)

State	Optometry School	Clinic Site	Population Characteristics
CALIFORNIA:	Southern California College of Optometry	Fort Ord Army Medical Center Fort Ord, CA	Active duty, retired military, and dependents
		Marine Corps Air Station El Toro, CA	
		March Air Force Base Riverside, CA	
		Naval Regional Medical Center San Diego, CA	
		Norton Air Force Base San Bernardino, CA	
		Terminal Island Shipyard Health Center Long Beach, CA	Civilian shipyard workers, active duty military, retired military, and military dependents
		Baldwin Park Optometric Center Baldwin Park, CA	Primarily Hispanic community
		Optometric Center of Los Angeles Los Angeles, CA	Open to the public--south central metropolitan area of Los Angeles
		Veteran's Administration Hospital Brentwood, CA	Veteran mental care in-patient facility

APPENDIX C

EXISTING CLINICAL SITES IN THE WICHE STATES USED BY SCHOOLS OF OPTOMETRY
(Continued)

State	Optometry School	Clinic Site	Population Characteristics
CALIFORNIA:	Southern California College of Optometry	Veteran's Administration Outpatient Clinic Los Angeles, CA	Veteran
		Children's Hospital of San Diego San Diego, CA	Specialized rotation in the hospital's Speech, Hearing, and Neurosensory Center
		USC Interdisciplinary Health Team Los Angeles, CA	Selected patients from the USC dental with multiple health problems
	University of California, Berkeley School of Optometry	Letterman Army Medical Center San Francisco, CA	Active duty military, retired military, and military dependents
		Palo Alto Veteran's Administration Hospital Vision Clinic Palo Alto, CA	Veteran--includes low vision services
		Sacramento Veteran's Administration Center Vision Clinic Sacramento, CA	Veteran--includes low vision services
		Guadalupe Health Center Oakland, CA	Primarily Hispanic community

APPENDIX C

EXISTING CLINICAL SITES IN THE WICHE STATES USED BY SCHOOLS OF OPTOMETRY
(Continued)

State	Optometry School	Clinic Site	Population Characteristics
CALIFORNIA:	University of California, Berkeley School of Optometry	Pacific Medical Center San Francisco, CA	Contact lens patients
COLORADO:	Southern California College of Optometry	Albuquerque Area Office Ignacio, CO	Patient care to Indian Health Service hospitals and ambulatory clinics--Native Americans
	Pacific University College of Optometry	Colorado Optometric Center Denver, CO	Mixed Hispanic, Black, low income, urban
HAWAII:	Southern California College of Optometry	Tripler Army Medical Center Honolulu, HI	Active duty, retired military, and dependents
	Pacific University College of Optometry	Tripler Army Medical Center Honolulu, HI	Active duty, retired military, and dependents
IDAHO:	None		
MONTANA:	None		
NEVADA:	Southern California College of Optometry	Las Vegas Low Vision Center Las Vegas, NV	Low vision services for the blind

APPENDIX C

EXISTING CLINICAL SITES IN THE WICHE STATES USED BY SCHOOLS OF OPTOMETRY
(Continued)

State	Optometry School	Clinic Site	Population Characteristics
NEW MEXICO:	Southern California College of Optometry	Acoma-Canoncito-Laguna (ACL) Albuquerque Mescalero Santa Fe Zuni Alamo Dulce Laguna Taos	Patient care to Indian Health Service hospitals and ambulatory clinics in the Albuquerque area
		Crownpoint Gallup Shiprock Fort Wingate Tohatchi	Patient care to Indian Health Service hospitals and ambulatory clinics in the Navajo area
OREGON:	Pacific University College of Optometry	Multnomah County Health Department Portland, OR	Low income White, Black, and Hispanic
UTAH:	None		
WASHINGTON:	Southern California College of Optometry	Madigan Army Medical Center Tacoma, WA	Active duty, retired military, and dependents
	Pacific University College of Optometry	Madigan Army Medical Center Tacoma, WA	Active duty, retired military, and dependents

APPENDIX C

EXISTING CLINICAL SITES IN THE WICHE STATES USED BY SCHOOLS OF OPTOMETRY
(Continued)

State	Optometry School	Clinic Site	Population Characteristics
WASHINGTON:	Pacific University College of Optometry	American Lake Veteran's Administration Hospital Tacoma, WA	VA eligible, predominantly White males, low income
		Barnes Veteran's Administration Hospital Vancouver, WA	VA eligible, predominantly White males, low income
		Indian Health Service Washington reservations	Low income Native Americans
		Seattle Indian Health Board Seattle, WA	Low income Native Americans
		Whidbey Island Naval Air Station Oak Harbor, WA	Active duty, retired military, and dependents

APPENDIX D

STATE REACTIONS TO REGIONAL PLAN

STATE	POSITIVE VALUE/ATTRACTION OF PLAN	POSSIBLE PROBLEMS OR CONCERNS
Alaska	• value of additional clinical site to serve rural areas • need to attract practitioners into remote areas	
Arizona	• some in profession see value of clinical site • program could help recruit and counsel pre-optometry students • PSEP support fees could be increased substantially to support plan development	• low rate of acceptance of Arizona students by schools of optometry • relative low level of support for social welfare programs, e.g., no Medicaid • problem to find funding to develop clinical site
California	• possibility of addressing underrepresentation of minorities in profession • delivery of care to underserved populations; particularly minority and inner city	• outside funding for development would make program more attractive • potential for California to become a sending state for field of optometry
Colorado	• state is positive toward "regional concept" • guaranteed return of students to practice in underserved areas	• need to clarify a successful strategy to recruit minorities
Hawaii	• interest in value of additional clinical placement • value of State Coordinating Committee in which profession could be involved	
Idaho	• development of coordinated system to respond to students seeking practice opportunities-value of regional data-based placement service • services that could be provided by clinic to underserved groups; particularly migrants and developmentally disable • potential for clinically-based continuing education and value to practitioners of contacts with students • state generally endorses regional concept	• how can plan/clinic address totality of state's needs-especially in rural areas • cost can be a barrier
Montana	• potential sites include State School for Blind, University-affiliated Program for the Developmentally Disabled at University of Montana, VA Hospital in Helena, Boulder Hospital for the Retarded • state generally endorses value of regionalism • potential for improved continuing education; the idea of optometric education center was raised, with possibility of linking with medical division of CE at MSU • increased communication between schools and state	• recent drop in number of optometry applicants seeking certification (not necessarily a problem because of high O.D. ratio in state). • questionable ability of clinical site to deal with dispersed population (enough patients in one place?) • concern that clinical sites serve primarily an educational purpose and not "use" students

APPENDIX D

STATE REACTIONS TO REGIONAL PLAN
(Continued)

STATE	POSITIVE VALUE/ATTRACTION OF PLAN	POSSIBLE PROBLEMS OR CONCERNS
Nevada	• possibility for developing another clinical site • increased communication between schools and state	• most students return to practice in state and most communities that can support an O.D. have one
New Mexico	• possibility to enroll all students in Western Schools of Optometry, and perhaps decrease total number supported to off-set operational costs of regional plan	• Practitioners question if there are enough sites that could economically support more O.D.'s if the state's ratio increases to 11.4
Oregon	• clinical site to meet unserved needs could be a selling point • potential for improved continuing education to practitioners • support for "regional" concept	• cost could be a problem
Utah	• on-site clinical facilities will attract students back to Utah • properly situated clinic could serve unmet need in rural areas • potential for clinically based CE • need for support for greater number of students recognized	• cost of establishing clinic • questionable support for more students • question of "servitude" or shifting of resources to justify funding
Washington	• additional training sites in underserved areas • possible mechanism for retaining graduates for practice in the state	• uncertainly about substantially increasing the number of state supported students
Wyoming	• possibility of having a clinical training site for both services and continuing education	• loss of flexibility in current bilateral contracts with the two private schools

APPENDIX E

SCHEDULE OF STATE LEGISLATIVE SESSIONS

State	Date Legislature Convenes	Length of Session	Approximate Date of Adjournment	Budget Consideration
ALASKA	January 19, 1981	30 Calendar Days	February 18, 1981	Annual
	January 11, 1982		February 10, 1982	
	January 10, 1983		February 9, 1983	
ARIZONA	January 12, 1981	No Later Than Third Friday in April	April 17, 1981	Annual
	January 11, 1982		April 16, 1982	
	January 10, 1983		April 15, 1983	
CALIFORNIA	December 6, 1982 (In Session Continuously	In Session Continuously	November 30 of Even Numbered Years	Annual
COLORADO	January 7, 1981	No Limit		Annual
	January 6, 1982			
	January 5, 1983			
HAWAII	January 21, 1981	60 Legislative Days	April 14, 1981	Biennial--Odd Year
	January 20, 1982		April 15, 1982	
	January 19, 1983		April 16, 1983	
IDAHO	January 12, 1981	No Limit		Annual
	January 11, 1982			
	January 10, 1983			
MONTANA	January 5, 1981	90 Legislative Days	May 8, 1981	Biennial--Odd Year
	Does Not Meet in 1982			
	January 3, 1983		May 5, 1983	

APPENDIX E

SCHEDULE OF STATE LEGISLATIVE SESSIONS
(Continued)

State	Date Legislature Convenes	Length of Session	Approximate Date of Adjournment	Budget Consideration
NEVADA	January 19, 1981	60 Calendar Days	March 20, 1981	Biennial--Odd Year
	Does Not Meet in 1982			
	January 17, 1983		March 18, 1983	
NEW MEXICO	January 20, 1981	60 Calendar Days	March 21, 1981	Annual
	January 19, 1982	30 Calendar Days	February 17, 1982	
	January 18, 1983	60 Calendar Days	March 19, 1983	
OREGON	January 12, 1981	No Limit		Biennial--Odd Year
	Does Not Meet in 1982			
	January 10, 1983			
UTAH	January 12, 1981	60 Calendar Days	March 13, 1981	Annual
	January 11, 1982	20 Calendar Days	January 31, 1982	
	January 10, 1983	60 Calendar Days	March 15, 1983	
WASHINGTON	January 12, 1981	105 Calendar Days	April 27, 1981	Biennial--Odd Year
	January 11, 1982	60 Calendar Days	March 12, 1982	
	January 10, 1983	105 Calendar Days	April 25, 1983	
WYOMING	January 13, 1981	40 Legislative Days	March 9, 1981	Biennial--Even Year
	January 12, 1982	20 Legislative Days	February 8, 1982	
	January 11, 1983	40 Legislative Days	March 7, 1983	

APPENDIX F

TOTAL IMPLEMENTATION BUDGET

		Year 1			Year 2			Year 3	
A. Colleges of Optometry									
1. Personnel	FTE			FTE			FTE		
Program Coordinator	.50	$ 16,000		.50	$ 16,000		.50	$ 16,000	
Secretary	.50	5,000		.50	5,000		.50	5,000	
Clinic Director	[.25	7,500]*		[.20	6,000]		[.10	3,000]	
Faculty Support	.50	12,500		.50	12,500		0		
		41,000			39,500			24,000	
Fringe Benefits-15%		6,150	[1,125]		5,925	[900]		3,600	[450]
Total Personnel		$ 47,150			$ 45,425			$ 27,600	
2. Travel									
School coordinating meetings (3 trips x 2 persons x $350)		2,100			2,100			$ 1,400	
Faculty Development Program (1 trip x 4 persons x $300)		1,200			1,200			1,200	
Miscellaneous		800			800			800	
Total Travel		$ 4,100			$ 4,100			$ 4,100	
3. Other									
Development of instructional material & evaluation instruments		5,000			1,000			1,000	
Telephone & Postage		1,200			1,200			1,200	
Supplies & Copying		1,700			1,700			1,700	
Total Other		[$ 7,900]			[$ 3,900]			[$ 3,900]	
Total of 1, 2, & 3 for each college		$ 59,150			$ 53,425			$ 34,900	
4. Overhead									
PUCO (50% of salary & benefits)		23,575			22,713			13,800	
SCCO (73.8% of salary & benefits)		34,797			33,524			20,364	
UCB (34.2% of salary & benefits)		16,125			15,535			9,439	
TOTAL (for all 3 colleges)		$251,947			$232,047			$148,308	
TOTAL (minus in-kind contributions)		$235,422			$221,247			$140,958	

*Brackets [ ] mark those amounts that would be provided by in-kind contributions.

APPENDIX F

TOTAL IMPLEMENTATION BUDGET
(Continued)

	Year 1	Year 2	Year 3
B. Outreach Clinics			
1. Personnel			
1 FTE faculty @ 3 new sites @ $30,000	0	$ 45,000* [30,000]	$ 90,000 [60,000]
1 secretary/receptionist @ 3 new sites @ $10,000	0	15,000 [10,000]	30,000 [20,000]
		60,000	120,000
Fringe Benefits-15%		9,000 [6,000]	18,000 [12,000]
Total Personnel	0	$ 69,000	$138,000
2. Equipment			
Varies by size & scope of clinic (see discussion)			
Minimum costs for a full scope clinic: 1 faculty & 3 students $92,000 @ 3 sites (one time only cost)	0	276,000 [176,000]	0
3. Travel			
Faculty development program (1 trip x 13 persons x $350)	4,550	4,550	4,550
4. Overhead			
(50% of salaries & benefits)		34,500 [22,770]	69,000 [46,000]
TOTAL	$ 4,550	$384,050	$211,550
TOTAL (minus in-kind contributions)	$ 4,550	$139,280	$138,000
C. Placement Network			
Personnel	6,000	6,000	Network becomes self-supporting from fees.
Travel	1,000	1,000	
Supplies, materials	500	500	
Data base maintenance and repair costs	500	500	
Start-up costs	2,300	0	
Publicity	6,855	6,855	
TOTAL (for placement network)	$ 17,155	$ 14,855	$ 0

*This figure assumes clinics would not be operational until mid-year.

APPENDIX F

TOTAL IMPLEMENTATION BUDGET
(Continued)

		Year 1		Year 2		Year 3
D. State Coordinating Committees						
Personnel						
Costs assumed by participants						
Travel						
3 meetings per year (3 trips x 5 persons x 13 states x $100)		$ 19,500		$ 19,500		[$ 19,500]
E. Regional Advisory Committee						
Personnel						
Costs assumed by participants						
Travel						
2 meetings (2 trips x 19 persons x $350)		13,300		13,300		[6,650]
F. WICHE Administrative Costs						
Personnel	FTE		FTE		FTE	
Project Director	.75	24,000	.50	16,000	.50	16,000
Secretary	1.00	12,000	1.00	12,000	1.00	12,000
		36,000		28,000		28,000
Fringe Benefits-19.2%		6,912		5,376		5,376
Total Personnel		$ 42,912		$ 33,376		$ 33,376
Travel						
15 meetings x $350		5,250		3,500		3,500
Other						
Telephone & Postage		1,200		1,200		1,200
Supplies & Copying		1,700		1,700		1,700
Office Rent		1,600		1,600		1,600
Overhead (55.3% of salaries & benefits)		23,730		18,456		18,456
TOTAL		$ 76,392		$ 59,832		$ 59,832

APPENDIX F

TOTAL IMPLEMENTATION BUDGET
(Continued)

	Year 1	Year 2	Year 3
G. Newsletter			
Editorial Support	$ 3,000	$ 3,000	$ 3,000
Printing (4 issues per year)	8,000	8,000	8,000
TOTAL	[$ 11,000]	[$ 11,000]	[$ 11,000]

APPENDIX F

COST SUMMARY FOR IMPLEMENTATION

	Year 1	Year 2	Year 3
A. Colleges of Optometry			
PUCO	$ 82,725	$ 76,138	$ 48,700
SCCO	93,947	86,949	55,534
UCB	75,275	68,960	53,778
B. Outreach Clinics	4,550	384,050	211,550
C. Placement Network	17,155	14,855	0
D. State Coordinating Committees	19,500	19,500	19,500
E. Regional Advisory Committee	13,300	13,300	6,650
F. WICHE Administrative Costs	76,392	59,832	59,832
G. Newsletter	11,000	11,000	11,000
TOTAL	$393,844	$734,584	$466,544

COST SUMMARY--MINUS IN-KIND CONTRIBUTIONS

	Year 1	Year 2	Year 3
A. Colleges of Optometry	$235,422	$221,247	$140,958
B. Outreach Clinics	4,550	139,280	138,000
C. Placement Network	17,155	14,855	0
D. State Coordinating Committee	19,500	19,500	0
E. Regional Advisory Committee	13,300	13,300	0
F. WICHE Administrative Costs	76,392	59,832	59,832
G. Newsletter	0	0	0
TOTAL	$366,319	$468,014	$338,790

APPENDIX F

BUDGET JUSTIFICATION

A. Colleges of Optometry

1. Personnel

a. Program Coordinator--1.50 FTE

Senior level administrator who will coordinate overall regional program activities for the college, including budget, admissions, instruction, evaluation, continuing education, and manpower placement. Principal program liaison with other optometry colleges, WICHE, state optometric associations, state and federal government, and the public.

b. Secretary--.50 FTE

The 50 percent secretary will be required to provide staff assistance to the Program Coordinator as well as other college staff contributing to the project. In addition to clerical duties, the secretary will be responsible for routine telephone and written communication.

c. Clinic Director-.25 FTE

During the development phase, will be responsible for directing the development of one new outreach clinic, developing learning resource material for outreach programs, determining teaching mode for shared clinical programs, and selecting outreach clinical staff. Will also participate in school coordinating meetings, faculty development seminar, and outreach clinic site visits. (0.25 FTE is equal to 55 working days. This estimate is based on 29 days of development activities and 26 days of travel.)

d. Faculty Support--.5 FTE

Various faculty will be required to assist in developing learning resource materials and evaluation instruments; coordinating graduate and library programs; assisting in the regional admissions program; and assisting in the faculty development program. Some faculty will travel to the faculty development program, outreach clinics, and to school coordinating meetings. (0.5 FTE is equal to 110 working days. This estimate is based on 92 days of development and 18 days of travel.)

2. Travel

Adequate travel funds are essential for developing and coordinating the overall program. The table below outlines the minimum expected travel for each college. Travel which will be funded from the college's budget is identified. The remaining travel would be funded by other sources.

Position	Travel	Est. Days of Travel	College Budget
Project Coordinator	3 school coordinating meetings @ $350	5	$1,050
	2 regional advisory meetings	4	0
	4 state coordinating meetings	6	0
Faculty	6 outreach clinics	9	0
	1 faculty development program @ $300 x persons	9	900
Miscellaneous	4 trips @ $200*	4	800
Director of Clinics	3 school coordinating meetings @ $350	5	1,050
	12 outreach clinics	18	0
	1 faculty development program @ $300	3	300
TOTAL		63	$4,100

*It is projected that at least four trips will be required to meet with legislators and staff or to confer with state associations or WICHE. Such travel may also involve the chief administrator of the college, but funds are requested only for the Program Coordinator. This travel is estimated at $200 per trip.

3. Other Costs

The proposed program requires that mutually acceptable teaching modes be established at the various clinical sites to facilitate the training of students from several schools at one site. To accomplish this, it is envisioned that teaching syllabi and other educational materials need to be developed as well as student, site, and program evaluation instruments prepared. These activities will incur printing, photography, consultant, and communication expenses. The total estimate is $5,000.

The office of the regional Program Coordinator will incur miscellaneous office expenses, such as phone, duplicating charges, supplies, and postage. Supplies will be required for the School Coordinating Committee meetings and the faculty development program. Telephone and postage are estimated at $100 per month; office and meeting supplies, $1,700 per year.

b. Outreach Clinics

1. Personnel

The development of three new outreach clinics is proposed. Based on the past experience of the schools, the first-year expenses for operation require approximately $40,000 in personnel costs. This includes support for a full-time clinical faculty position and a secretary/receptionist position.

The full-time faculty member would hold an academic appointment with at least one of the colleges. This person would be the responsible faculty at the outreach sites. In addition to teaching and student evaluation responsibilities, this faculty member would participate in clinical curriculum planning, assist in placement of students, coordinate local continuing education activities, and assist in program evaluation activities.

The secretary/receptionist would be required to provide secretarial support to the outreach clinical faculty as well as be responsible for patient scheduling, clinic records, and associated receptionist duties.

2. Equipment

Costs vary according to the scope, size, and location of the clinic. These costs can range from $102,000 to $325,000 per clinic.

3. Travel

One faculty development meeting will be held to provide orientation and in-service training relative to the regional program, clinical teaching methods, and student evaluation procedures. One faculty person from one outreach clinic in each state will attend (13 persons x 1 trip x $350 = $4,550).

C. Placement Network

The placement network would be implemented through a contractual arrangement with the National Health Profession Placement Network based at the University of Minnesota. The budget estimates reflect expected expenditures based on current costs for utilizing this service.

D. State Coordinating Committee Meetings

Travel is required for five persons to attend three one-day meetings in each state. The expected composition of this committee includes two representatives each from the state optometric association and state government and one representative from one of the three colleges. Travel and per diem are estimated at $100 per person for these in-state meetings (5 persons x 3 trips x 13 states x $100 = $19,500).

E. Regional Advisory Meeting

Travel is required for one representative from each state to travel to two meetings per year. Travel and per diem are estimated at $350 per person for these out-of-state meetings (13 persons x 2 trips x $350 = $9,100).

Travel is required for the Program Director and chief administrator of each college to attend the regional advisory meeting (6 persons x 2 trips x $350 = $4,200).

Total regional advisory meeting travel: $9,100 + $4,200 = $13,300.

F. WICHE

1. Personnel

The coordination of the regional program by WICHE will require a .75 FTE Project Director and a full-time secretary. Other staff may participate in program-related activities, but this will be provided as in-kind services.

The Project Director will be responsible for directing the overall coordination of the program, including Advisory Committee meetings, program evaluation activities, WICHE-related development activities, and liaison with pertinent agencies and organizations.

The full-time secretary is required to provide support to the Project Director as well as other WICHE staff when they assist in regional program activities.

2. Travel

Travel is conservatively estimated at 15 trips per year. Expected program travel includes 3 school coordinating meetings, 1 faculty development program, 39 state meetings, and 2 regional advisory meetings. Potentially, the Project Director or other WICHE staff should attend all of these. Travel is estimated at 15 out-of-state trips at $350 each. This will allow attendance at the regional and school coordinating meetings, and some of the state meetings.

3. Other

Miscellaneous office expenses include telephone and postage, $100 per month; supplies and copying, $1,700 per year; and office rent, $1,600 per year.

G. Newsletter

The common means of communicating the accomplishment of program activities to WICHE Commissioners, legislators, practitioners, appropriate state and federal employees, and the public will be a multi-paged newsletter published quarterly. This activity will be under the direction of one entity (most likely WICHE), with input from the outreach clinics and the colleges. A part-time staff writer and/or editorial resources person will be required to direct the development of the newsletter. In addition, funds will be required for printing costs.

APPENDIX G

OPERATIONAL BUDGET FOR NEW REGIONAL PROGRAM COMPONENTS

	Year 4		Year 5	
A. Colleges of Optometry				
1. Personnel	FTE		FTE	
Program Coordinator	.50	$ 16,000	.50	$ 16,000
Secretary	.50	5,000	.50	5,000
		21,000		21,000
Fringe Benefits-15%		3,150		3,150
Total Personnel		$ 24,150		$ 24,150
2. Travel				
School coordinating meetings (2 trips x 2 persons x $350)		1,400		1,400
3. Other				
Telephone & Postage		1,200		1,200
Supplies & Copying		1,700		1,700
Total of 1, 2, & 3 for each college		$ 28,450		$ 28,450
4. Overhead				
PUCO (50% of salary & benefits)		12,075		12,075
SCCO (73.8% of salary & benefits)		17,822		17,822
UCB (34.2% of salary & benefits)		8,259		8,259
TOTAL (for all 3 colleges)		$123,506		$123,506
B. Outreach Clinics				
1. Personnel				
0.5 FTE @ 3 new sites @ $30,000		45,000		45,000
Fringe Benefits-15%		6,750		6,750
Total Personnel		51,750		51,750
2. Travel				
Faculty development program (1 trip x 13 persons x $350)		4,550		4,550
3. Overhead				
(50% of salaries & benefits)		25,875		25,875
TOTAL		$ 82,175		$ 82,175

APPENDIX G

OPERATIONAL BUDGET FOR NEW REGIONAL PROGRAM COMPONENTS
(Continued)

	Year 4	Year 5
C. Placement Network		
Self-Supporting		
D. State Coordinating Committees		
In-Kind Contribution		
E. Regional Advisory Committee		
In-Kind Contribution		
F. WICHE Administrative Costs		
In-Kind Contribution		
G. Newsletter		
In-Kind Contribution		

TOTAL OPERATIONAL COSTS (ESTIMATED)

	Year 4	Year 5
A. Colleges of Optometry	$123,506	$123,506
B. Outreach Clinics	82,175	82,175
C. Placement Network	0	0
D. State Coordinating Committees	0	0
E. Regional Advisory Committee	0	0
F. WICHE Administrative Costs	0	0
G. Newsletter	0	0
TOTAL	$205,681	$205,681

ADDENDUM B

MATERIALS FROM FOUR MEETINGS OF PROJECT ADVISORY COMMITTEE

B-1

PROJECT TO DEVELOP A REGIONAL PLAN FOR OPTOMETRY EDUCATION IN THE WEST

ADVISORY COMMITTEE

AGENDA

Southern California College of Optometry
Administration Conference Room
Fullerton, California
Saturday, January 27, 1979

9:00 a.m.	Orientation to the Project
9:15 a.m.	Background to the Project and WICHE's experience
9:30 a.m.	Role of Advisory Committee
9:45 a.m.	Concept of regionalization -Usefulness in other health professions
10:15 a.m.	What does an optometrist do?--Dr. Fair -Patterns of practice
10:45 a.m.	The education of optometrists -Basic sciences (basic & visual sciences)--Dr. Flom -Clinical years (clinical sciences & services)--Dr. Bleything
11:30 a.m.	-Tour of SCCO facilities--Dr. Hopping
12:00 noon	Lunch
1:00 p.m.	Optometry manpower: statistics, trends and issues -Relationship to ophthalmology
2:00 p.m.	Access to optometric education in the West -WICHE Student Exchange Program -Comments by representatives of three schools
3:00 p.m.	Feedback from Committee
3:30 p.m.	Future meetings
4:00 p.m.	Adjourn

SUMMARY OF THE FIRST ADVISORY COMMITTEE MEETING

PROJECT TO DEVELOP A REGIONAL PLAN FOR OPTOMETRY EDUCATION IN THE WEST

Southern California College of Optometry
Fullerton, California
Saturday, January 27, 1979

The meeting began at 9:00 a.m. with a brief introduction to the project. The purpose of the meeting was described as primarily an information exchange session. Members of the Committee come from diverse backgrounds and will provide varying kinds of expertise to the project. This meeting was designed to provide a common base of information, and to answer questions members might have. Members of the Committee around the table then introduced themselves. All members of the Advisory Committee were present except for: Glenn Hackney, Albert Lemoine, Ira Moscovice, Robert Thomas, and Bill Tietz. WICHE staff members present included: Phil Sirotkin, Executive Director of WICHE, Bill McConnell, who is responsible for the Student Exchange Program, and Susan Klein, Optometry Project Coordinator.

Phil Sirotkin described WICHE "as a creature of the states, and an instrument of state government." WICHE has worked to increase cooperation between the states and to maximize the potential of scarce resources available within the West. WICHE has been dedicated to providing cost-effective, high quality programs in education and toward assuring an adequate supply of health professionals. WICHE has had a long-standing relationship with optometry through the Student Exchange Program (SEP). This particular project, looking at the regionalization of optometry education, fits naturally with the general goals of WICHE. Phil also described the composition and selection of the Advisory Committee.

The overall schedule for the optometry project (hand-out provided) and the last monthly progress report (hand-out provided) were reviewed by Susan Klein. There are four basic deliverables required by the 18-month contract: (1) review of regionalization plans in the health professions which might be applicable to optometry; (2) an analysis of manpower data including current supply and projections of future need; (3) a preliminary plan for developing a regional program; and (4) a final implementation plan.

The most important activities currently underway include: (1) visits to the three schools in the West in order to review curricula and the interface with physical facilities, admissions procedures and particular needs of students, extramural programs and clinical activities; and (2) contacts with State Optometric Associations. During these visits the programs of WICHE and the SEP are briefly described. These meetings with the states are designed to describe our project, to allow for input from practitioners in the field, to find out what the legislative issues are impacting on the profession, to learn more about the needs for continuing education, the public health role of the optometrists in various states, licensure, and other issues of concern to the profession. At this point contact has been made with each association of the 13 states and Susan Klein is scheduled to attend each meeting within the next few months.

The role of the Advisory Committee is to alert the project staff to issues, and to help develop and to assess the practicality, acceptability, and feasibility of the preliminary plan, and to aid in state review of this plan. We hope that the Committee will help facilitate contacts, provide us with access to data, and facilitate linkage with state governments, educational institutions and the profession. Specific questions posed to the Committee initially included: (1) what are the best current population projections for each state, particularly including age distributions; and (2) how can we obtain the best information on optometrists currently practicing within each of the states. A fair amount of discussion ensued on these issues.

Dr. Fair then began his discussion of the role of the optometrist and patterns and practice. The discussion of regionalization was postponed for the afternoon so that discussion of manpower issues could follow Dr. Fair's presentation. He distributed a series of handouts which are quite important in defining the scope of practice of optometrists: (1) a definition of the primary care optometrist; (2) the conclusions of the HRA study on reimbursement under medicare issues in 1976; and (3) a portion of the report to the President on the Status of Health Professions, August 1976, pertaining to optometry. (These three are enclosed for members not present at this meeting.)

Ron Fair talked about the need to put the patient's needs, the public's needs first in the manpower area. He described the importance of the optometrist in delivering primary care in the United States and summarized the components of the basic examination done by an optometrist in practice. He described the importance of the referral network and the interrelationship of optometrists with the other health professions including ophthalmologists and general practitioners. Ron summarized the results of a study which he did on the kinds of problems that he has found in his practice over the past 16 years, with the use of a computerized data base.

Some of the current information being disseminated by the American Optometric Association describing the role of the optometrist and the seven basic parts of the optometry examination were distributed and discussed. There was some discussion of how this kind of publicity would affect the demand for services and thereby affect manpower needs.

Problems in assessing the need for eye care were discussed; i.e., age-related needs. Existing epidemiological data and the need for better data were discussed. Jim Boucher mentioned also the importance of the optometrist as a primary care entry point particularly for blood pressure screenings. Increasing training of paraoptical technicians was also mentioned and the trend in the field affecting manpower.

A discussion on the question of optimal ratios of practitioners to population developed. What is the optimal or acceptable eye care? The number of health professionals needed depends ultimately on this kind of question; the answers to this question involve subjective judgments.

Susan Klein described the manpower component of the project as being somewhat behind schedule. The best data available on optometrists in the United States is a 1973 DMI study. The problem with that data is that it is now old. Although an update of that study is currently underway, the results will not be available for some time to come. Conversations with the contract officer on that project in Washington indicate that the data collection has been slow and that the response rate has been unacceptably low. An additional problem with this current study is that two different systems have been used to collect the data (Redman and the CHSS system); unfortunately there are going to be problems in comparability between the modes of data collection. Hence, this federal study will not be of much practical value to our project.

At this point we have decided that the best way to proceed is to obtain the best available current data from state associations and boards in each of the 13 western states. There were many helpful comments from the Advisory Committee about how to secure the best data from various states. California represents a particular problem because of the large number of optometrists in that state. There are problems in validity and reliability of the data from various sources. Every effort will be made to make sure that the numbers included in our report are accurate. Complicating factors include the fact that many O.D.'s license in a number of states, and that some state associations may not know of O.D.'s practicing in the state who are not members of the association.

Current manpower supply for the WICHE region as portrayed on the large blue chart were reviewed. Overall, as one looks at the trend from 1973-1978, there is an overall increase in the supply of optometrists. It is important to note the variability of data from the 1978 Blue Book (a supposed complete listing of all the practicing optometrists) with the numbers shown in the rosters obtained from the various states. It was generally agreed that column F (number of optometrists shown in current state rosters) would be a more reliable data source. However, there is a problem in comparability of data between states. The possibility of working with HSA's was discussed and it was generally agreed that that would simply put an extra step into the process, and that it would be better to go directly to state boards and state associations for data.

We are attempting also to look at the number of ophthalmologists in relationship to optometrists. Many of the manpower studies, unfortunately, have not looked at the two professional groups together and it is important to do so. For instance, in urban areas where there is an oversupply of ophthalmologists, the M.D.'s are frequently practicing largely optometry. The point was made that there are also about 200 residencies in the State of California.

Availability of good population projections for the various states was discussed at length. The age and sex distribution of active optometrists in the WICHE states were reviewed as of 1973. There has been concern that a large number of O.D.'s came out of school after World War II, and that these O.D.'s will be retiring within the next 10 years, causing a sharp decrease in the supply of practicing O.D.'s. The WICHE study will be looking at how current enrollments will be offsetting separations by death and retirement.

The WICHE study will also be looking at rural/urban distributions, as exemplified on the map of Colorado, Wyoming and Utah, looking at the distributions of O.D.'s and ophthalmologists in those three states. The need to look at population for each of the counties in relationship to the supply of manpower was also discussed. Licensure and reciprocity were mentioned as issues to be investigated.

The WICHE study is also looking at the mobility of O.D.'s in the West in some detail. Colorado has currently been used as a case study (see preliminary data on handout). It was noted that on Table 1 (on Flow of Optometry Manpower in Colorado) that one cell of the table, those who attended high school in Colorado but went to school outside the region (N=14) will be disappearing because Illinois and Houston are no longer taking WICHE students. In addition, some of the western schools have been increasing their enrollment of students from outside the region.

Defining the scope of practice was again raised as an issue of utmost importance through the manpower question. Rural/urban differences in the practice of optometry were discussed. In rural small communities optometrists tend to be a more integral part of the primary health care delivery system.

The meeting then proceeded to a discussion of the education of optometrists. Dr. Merton Flom described Berkeley's curricula, particularly the basic and visual science components. While there are some differences between the schools there are some courses basic to all. (See curriculum breakdown handout.) Mert Flom pointed out that a university affiliated optometry school is different from a private school in that some courses can be taught by other departments; for instance at Berkeley, physics is taught in the physics department and the optometry school uses their facilities. It was commented, however, that this leads to problems in cost accounting. Berkeley recently changed their prerequisites so that students are required to have three years of curriculum before entering the optometry school; an increasing number of students now come in with a bachelors degree. A series of questions were asked about costing, FTE's, etc. Berkeley has 20 full-time FTE's, seven-eight clinical faculty--80% of them have Ph.D.'s. The program at Berkeley is a four-year program, 9 months of each year, with one summer clinical session. A brief description was given of Berkeley's Outreach Program which is much more limited than those of other schools. Problems associated with these extramural programs include administrative problems (i.e., malpractice coverage) and assuring that instruction occuring away from the university is done by competent instructors. Student/faculty ratios at Berkeley are 12.5 to 1, nationally the ratio is 10 to 1; the SUNY system is best with 3 to 1. Recommendations suggest the appropriate ratio is 6.5 students to 1 faculty.

A curriculum report done in Berkeley in 1973 suggests several issues that may be relevant to regionalization: (1) the length of the curriculum; (2) the quality of incoming students, their backgrounds and needs; (3) the scope of optometric practice. Berkeley's position is that the best way to train optometrists for future practice is to concentrate on teaching the basics, based on the assumption that these provide a basis from which all advances are built. Therefore, changes or innovations in curriculum have been viewed from the standpoint of how they take away from the basic courses. The greatest changes in optometry have come from advances in understanding, as opposed to technical advances (except for contact lenses). The greatest changes in the profession now are resulting from changes in state laws, for instance, those which allow the use of diagnostic drugs. If new courses need to be added to the curriculum, consideration might be given to requiring another year of training.

Dr. Bleything then began a discussion of the clinical training of the optometrist. He noted that there are four career tracks: research, education, industrial settings, and practice. Optometrists find themselves in various kinds of delivery sites: hospitals, military, solo practice, group practices, and HMO's. He described four basic components to optometry curriculum: (1) basic sciences which are basic to clinical practice; (2) visual sciences; (3) behavioral sciences; and (4) the clinical sciences. Technique courses begin in the first year involving the student's early in-patient care. The Pacific college also has a number of Outreach programs and preceptor sites. Since Pacific is situated in a small college town, its population is very well served; thus the school must go to other sites to provide good clinical training for its students. The fourth year of the curriculum is generally devoted to clinical practice. Public health curriculum has been a relatively new addition to schools of optometry.

After lunch in the student room, the Committee broke down into groups to tour the SCCO facilities. Members gained an impression of what kinds of facilities and equipment are required for the education of optometrists. The tour included a tour of the clinical facilities which were in use on Saturday.

Bill McConnell (WICHE) described existing regionalization programs which are being reviewed. He began with a description of the simplest kinds of programs which exist and proceeded toward the more complex systems. The simplest arrangement involves reciprocity of exchange between two states. At the next level are the direct bilateral contracts; an example of this are Wyoming's contracts with Pacific and Southern California schools of optometry. At the next level is the WICHE SEP which is described in one of the handouts. Colorado State University's veterinary medicine exchange program moves to another level of complexity; that school built more facilities to accomodate students from other states and the states agreed to help finance that expansion in addition to basic student support. The Tri-State Veterinary Medicine Program (Washington, Oregon, and Idaho) is also a more complex arrangement where the states get some services from the school.

The WAMI program in medical education is the most fully developed regional concept in health professional education. In the WAMI model, students receive their first year of basic science education at one of a number of feeder universities in the northwest. The students then go into the University of Washington, Seattle and then are fed back into clinical outposts in the 4-state region (the four states involved in this are Alaksa, Washington, Montana, and Idaho). A continuum in regionalization goes from simply providing places for students to the more comprehensive extreme where further services are provided to the sending states. Other regional programs being considered include the northeast regional approach to optometry education, the New England veterinary school proposal, and the SREB study in optometry. A discussion ensued on the costs of these various approaches, and how they should be figured. Dr. Bleything was particularly concerned that the figure used in the SEP in optometry was not, in fact, realistic. Problems in collecting data on the cost-of-education were discussed.

In developing a regional plan for optometry we need to look at the feasibility of involving other institutions in the educational program. Access of students in the West to schools of optometry is of key concern. It was noted that the three schools in the West take more students from the non-West than non-WICHE schools take WICHE students. Is it feasible for the schools in the western states to take more WICHE students and fewer students from other areas of the country? This question really only pertains to the Pacific and SCCO schools because Berkeley takes very few non-California residents. It is believed that these schools do not wish to expand the total number of training places available. It was suggested that it would not be feasible for the schools to take only WICHE students but that they could decrease the numbers of students from other regions of the country if there were enough financial stability ensured by the states. The question is what should the states do to ensure adequate numbers of practitioners for the future? Another question is how benefits of having these three schools in the region can get passed on to states without schools, for instance in the area of continuing education or public health activities. The concept of "educational opportunity" was raised; i.e., how students from various states fare in admissions, applicants versus acceptances by states. It was noted that some states, Wyoming, Idaho, and Alaska have the very best access to medical schools, in spite of the fact that they have no medical schools.

A table on the enrollment of students in the schools of optometry was reviewed. It was noted that the numbers of students from WICHE states is not synonomous with number of students involved in WICHE SEP. The number of optometry students in SEP for this year is 249; it is the third largest of the SEP programs. An error was noted on the table handed out--there are only 17 non-WICHE residents enrolled at the Berkeley school (a corrected table is enclosed). A question was asked about how many of those applicants not accepted are qualified. At Berkeley, approximately 250 of the 600 are considered qualified, 68 are accepted. SCCO considers about 50% of their pool acceptable, and Pacific said they could double the number of students they accept.

The questions of indenture laws requiring students to go back to practice in areas from which they came was discussed.

In this WICHE project, our goal is to look at the manpower data, access data, and projections of manpower needs in the western states. We will then try to assess what is appropriate state behavior to assure access to education, to meet manpower needs in health care delivery, and to equitably share the costs of the needed plan among the participating states.

It was decided that the next meeting of the Advisory Committee would be held on Monday, May 7 in or near San Francisco, so that we can visit the Berkeley school. The third meeting will be held on Saturday, September 15, at the Pacific school.

Meeting was adjourned at 4:00 p.m.

AGENDA

Advisory Committee Meeting

Regionalization of Optometric Education

Portland, Oregon

May 6 & 7, 1979

Sunday, May 6	Place: Meeting Room in Sheraton, Lloyd Center, Portland
3:00 p.m.	Progress Report and Orientation--Susan Klein
3:30 p.m.	Overview of Health Resources Administration and the Bureau of Health Manpower--Phil Hugill, Project Officer
3:50 p.m.	Comments on regional education and the development of this contract--Larry Clausen
4:30 p.m.	The importance of strong educational institutions to practicing optometrists--Treasure Ann Wheeler
4:45 p.m.	Student Access Issues (admissions criteria, attrition, applicant pool, recruitment of minorities, tuition, fees, books and living expenses)--Drs. Bleything, Flom and Hopping
5:45 p.m.	Meeting adjourns
6:00 p.m.	Bus pick-up for the Portland Clinic
6:45-8:00 p.m.	Dinner will be served at the Portland Clinic; tours of the facility will also be conducted.
8:15 p.m.	Bus pick-up for the hotel

OVER

Monday, May 7 Place: Board Room, Marsh Hall, Pacific University, Forest Grove

8:00 a.m.	Bus pick-up for Pacific University, hotel check-out
9:00 a.m.	Opening Comments--President James Miller, Pacific University
9:05 a.m.	Another view of optometry: an interdisciplinary approach to developmental disabilities--Emile Bernard
9:30 a.m.	Role of optometry in non-traditional delivery mechanisms and public health--Willard Bleything
10:00 a.m.	Review and discussion of the Manpower Report
11:15 a.m.	Review and discussion of the sketch of a preliminary plan & potential for implementation funding--Susan Klein
12:00 noon	Lunch
12:45 p.m.	Tour of Pacific University College of Optometry
1:30 p.m.	Issues in the costing of education and of regionalization in health professional training--Jim Topping, NCHEMS
2:30 p.m.	Costing issues from the perspective of the CSU Regional Vet Program--Bill Tietz
2:45 p.m.	Next steps in the development of a regional plan and the state review process--Bill McConnell
3:30 p.m.	Discussion and feedback
4:00 p.m.	Meeting adjourns. Bus pick-up for the Portland Airport (trip takes about one hour)

SUMMARY OF THE SECOND ADVISORY COMMITTEE MEETING

Project to Develop a Regional Plan for
Optometry Education in the West
Portland, Oregon
May 6 and 7, 1979

The meeting began at 3:00 p.m. on Sunday afternoon with a brief overview of the purpose of this project. In contrast to the first meeting which was designed primarily to orient committee members, the purpose of this meeting was to describe the work accomplished on the contract and to elicit feedback about the development of a Preliminary Plan.

Members of the Advisory Committee introduced themselves. All members were present except for Glenn Hackney, Lee Smith, Robert Thomas, Mardoqueo Chacon, and William Phillips. Other persons attending included Larry Clausen, Assoc. Dean, Pacific University College of Optometry, Phil Hugill, the Project Officer from the Bureau of Health Manpower, Coy Gainey from Region X, HEW office, and Jim Topping from NCHEMS who is serving as cost consultant to this project. WICHE staff present included Bill McConnell, Susan Klein, Al Nelson and Linda Dunham.

The Manpower Report has taken longer to complete than originally forecasted, primarily because data were not yet available from the national manpower study. Cooperation from committee members and various states has been excellent, however, and this report will be completed by the end of June. Briefly, the data show that maldistribution does exist in the West and that this situation will persist until the year 2000 unless some intervention is undertaken. It also appears that there are currently enough seats available in the three colleges of optometry to meet the region's need for manpower.

The review of existing regional programs has continued. In this regard, visits have been made to the WAMI program, the New England College of Optometry, and the new regional veterinary program at Tufts. The report on existing regional programs and their relevance for optometry will not be completed until the end of June.

Phil Hugill described the Bureau of Health Manpower as a component of the Health Resources Administration of Public Health Services. The Bureau generally supports the development of human resources needed by the U.S. health system. The major piece of legislation in this area was the Health Professional Education Assistance Act of 1976 (PL 94-484), ammended and funded in 1977. At that time there was more money in the budget for program development at various schools. Various projects were funded in optometry including a satellite clinic at Southern California College of Optometry and clinical clerkships, as well as this WICHE contract. However, budgets are now more constrained; there is now no money in the fiscal year 1980 budget under 788-D. This could become a problem since the current contract allows only for development of a plan and not for implementation. It was very useful to have the project officer involved in this meeting.

Larry Clausen presented a valuable overview of federal involvement in regionalization and the historical development of this particular contract. He described the major objectives of the WAMI program, the WOI veterinary program and the Regional Dental Education Program. Three objectives were common to all: 1) provision of educational opportunity to students from states without schools; 2) participating states paid full cost of education; and 3) all shared some form of decentralized or shared curriculum. Other aspects of the development of a regional program are summarized below:

ASPECT OF REGIONAL PLAN

Plan	Manpower Study	Cost Study	Enrollment Increase	New Construction	Decentralized Curriculum	
					Basic Science	Clinical
WAMI	No	Yes	Yes	No	Yes	Optional
WOI	Yes	Yes	Yes	Yes	Yes	
RDEP	No	Yes	No	?	Yes	

The current WICHE contract was built on these plans; manpower and cost studies are underway. The tentative plan does not call for increased enrollments or new construction, but does recommend a decentralized clinical curriculum.

The Region X, HEW office has been strongly involved in regionalization. About 1974, a study was done to assess whether a new school was needed in the Northwest; the data did not support a need for a new school. Instead a determination was made to strengthen the Pacific College by developing a regional approach. Dr. Hopping was at the same time beginning to develop a regional approach at Southern California College of Optometry. The interest leading to the development of this contract was thus broadly based. A considerable discussion ensued from a question raised by Dr. Tietz about the definition of regionalization and if it must involve a "shared curriculum;" this definition is apparently not a binding one. There has been a shift within the Bureau as well as federal legislation which have affected the funding of regional programs. There was general agreement that the three schools have been working toward cooperation in continuing education and the kind of changes that would be necessary to share fourth-year clinical sites.

Treasure Ann Wheeler summarized the reactions of Oregon's State Optometric Association to a regional plan in optometry education. The value this group saw in a regional approach probably reflects the fact that the Pacific College is in Oregon and the practitioners already benefit in many ways from that presence. The Association's listing of benefits on regionalization included the following: 1) better post-graduate continuing education; 2) referral for specialized instrumentation would be easier; 3) manpower supply would be maintained through involving practitioners in better recruitment and placement of students; 4) quality education would lead to better quality of care; 5) improving the interface between research and clinical practice; 6) provide clinical placement for fourth-year optometry students; and 7) improved public relations for optometrists in the community. Treasure also reported on a workshop held in Region X recently to discuss manpower needs in optometry; that meeting was supportive of the concept of regionalization for meeting the manpower and educational needs of the Northwest states.

A general discussion followed regarding the meaning of the manpower numbers for state or regional action, problems of redistributing manpower between states, of maintaining students trained, and problems of defining what an "ideal" or "adequate" supply of practitioners might be. David Grover raised a question about the need for increasing enrollments and the need to look at other strategies for solving the maldistribution problem; e.g., National Health Service Corps. The same states which are low in O.D.'s often have low numbers of other professionals (e.g., New Mexico), whereas those states with high numbers of O.D.'s probably have similar ratios for dentists and veterinarians; people are attracted by lifestyle, particularly independent practitioners. It was pointed out that there are areas of unmet need within each state. The problem of the mix of characteristics of practitioners was also discussed.

Drs. Bleything, Flom and Hopping presented data on the size of the applicant pool, the number of WICHE and non-WICHE acceptances, trends in minority and female enrollments, admissions criteria and student expenses for education. Although there has been a drop in the size of the applicant pool, the quality of applicants has actually improved. All three schools generally agreed they would ideally like to decrease the size of their classes in order to provide quality education.

On the evening of the sixth, the group had dinner at the Portland Clinic, a facility operated by the Pacific College to provide students with clinical exposure while meeting the service needs of the community.

On May 7th the meeting began with Emile Bernard's description of his multidisciplinary practice in Louisiana. Several years ago legislation was enacted to require the diagnosis and treatment of children with learning disabilities. Bernard's team consists of a clinical diagnostic psychologist, speech and language pathologist, audiologist, and optometrist. Early detection leads to early treatment and the prevention of more severe problems. There are relatively few of these developmental clinics in the western region. Bernard has worked hard to have this dimension of optometric practice reflected in the educational process. Dr. Lemoine suggested that other kinds of interprofessional linkages are available in the V.A. hospitals. The need for incorporating this kind of multidisciplinary approach into the regional programs was discussed.

A discussion followed on the trend toward specialization within optometry and growth in residencies. Dick Hopping talked about the opportunity to meet the public's needs in specialty areas through cooperative arrangements among the schools, and used SCCO's low vision clinic in Nevada as an example.

Dean Bleything then described the maldistribution of O.D.'s that exists within the Northwest and the innovations at Pacific which have been undertaken to broaden the clinical exposure of its students to differing patient populations and delivery models. A quote from a recent Public Health Service publication summarizes well the changes occuring within optometric education.

> "Optometry is one of several health professions that serves the public as a point of entry into the health care system. As such, the forces for change in the optometric curriculum are similar to those confronting the other health disciplines. Most notable among these forces is the rapid expansion of knowledge of the eyes, the expanding scope of optometric practice, increased social awareness of the importance of proper eye care, student demands for improved curricular relevance, and the priorities of external funding sources. Since many disease entities have observable manifestations in the eye, the optometry curriculum is being broadened to improve the continuity of vision care for the patient, serving as a bridge between the medical and optometric professions. In response to these influences, locations for training as well as curricula are changing."

Al Nelson led an in-depth discussion of the manpower report, sources of data and analytical methods. Many valuable questions and comments were made and will be incorporated into the draft which will be sent out to you later this month.

After lunch and a tour of the campus, Jim Topping discussed the issue of costing with the Committee (see outline handed out at the meeting). A subcommittee on costing was appointed; members are Drs. Bleything, Hopping and Flom, Donna Shepard and Denis Curry of the Washington Council on Postsecondary Education. This subcommittee met with Jim Topping and Bill McConnell on May 8, and agreed to proceed as follows:

1. Each of the schools are to send Jim Topping copies of their final revenue and expenditure statements for fiscal year 1977-78 and their current operating budgets with expenditures to date for fiscal year 1978-79.

2. The Committee will begin the cost analysis be deriving an historical cost per student figure based on actual expenditure data (estimated through June 30, 1979).

3. Once the preliminary program plan is in place, the Committee will estimate the cost of program improvements. These would be cost add-ons to the historical base. The historical base would also be adjusted for projected inflation.

4. Jim Topping will schedule visits to each of the three optometry schools during the month of June. The purpose of those visits is to collect the data necessary to complete the historical cost analysis.

5. A second meeting of the Costing Subcommittee is scheduled for Friday, July 6th in Denver.

Susan Klein briefly summarized the components of a preliminary regional plan: 1) a method to strenghten the recruitment of students; 2) develop a regional network of clinical placement sites in areas of unmet need; 3) develop a regional placement service; 4) implement a financial strategy; 5) expand the role of the colleges in continuing education; and 6) expand cooperation among the region's colleges. Ron Fair discussed the comments of the Bureau of Health Manpower when they were approached to fund an implementation phase to the current contract. Not only has the amount of money available in the Bureau decreased, the discretion they can exercise has been limited by Congressional action. Therefore, funding will depend not only on the quality of the plan, but political action as well.

Bill Tietz pointed to the need to develop a regional plan first and then to proceed with the costing. It was agreed, however, that we need to begin with some baseline costs.

It was suggested that another subcommittee be formed to work at the programmatic issues in the preliminary plan, and to discuss the pros and cons of various components. Susan Klein suggested this committee should be composed on one representative from each school, Bill Tietz and one practicing optometrist. Dr. Hopping preferred an exchange of position papers. Although the matter was not clearly resolved, it seems that both strategies would be appropriate to move toward formulation of a plan by September.

Bill McConnell described the process of state review of the plan:

1. A one-day meeting will be held in each of the thirteen states during October and November, 1979.

2. Project staff will ask advice and assistance from Advisory Committee members in identifying the individuals to be involved in the review, and will supplement this with advice and assistance through other WICHE contacts in the state. Interests to be involved include:

    -Optometry profession
    -State health agencies, HSA's, etc.
    -Legislators and/or staff
    -State higher education agency
    -Advisory Committee members
    -WICHE Certifying Officer
    -WICHE Commissioners
    -WICHE staff

3. Copies of the preliminary plan will be sent to participants for study in advance. The agenda will provide for:

    -Review of the major elements of the plan
    -Reactions to and discussion of the programmatic elements
    -Discussion of the manpower and access aspects
    -Determination of any suggested modification to the plan
    -Determination of roles to be played by various interest, in implementing the plan

-Assessment of extent of interest in and commitment to implementation by that state
-Determination of the procedure that would be necessary to obtain the state's participation in the plan.

There is clearly a need for more time to discuss the preliminary plan. Thus it was agreed that the Committee will meet for two days in September, the 14th and 15th.

The meeting adjourned at 4:00 p.m.

ADVISORY COMMITTEE MEETING
WICHE REGIONAL OPTOMETRY PROJECT

University of California, Berkeley
Library, Men's Faculty Club
October 19-20, 1979

Friday, October 19

8:30 a.m. Update on Development of the Preliminary Plan
- Subcommittee meetings held during the summer
- Three-month extension and new timetable
- Purpose of this meeting
- Role of Advisory Committee in approving plan for state review
- Brief description of the basic elements of the regional plan

9:00 a.m. Review of the Objectives of the Regional Plan
- What needs is the plan designed to meet?
- What are the benefits of the plan to participating states?
- What are the benefits to the colleges of optometry?
- How do the program's elements meet these objectives?

9:30 a.m. Coffee and Small Group Discussions
- Group discussions will provide opportunity for Committee members to ask questions and to comment on the plan and its development. School representatives who have been more directly involved in the planning process will act as discussion leaders.

10:30 a.m. Committee Reconvenes
- Feedback from each of discussion groups
- Comments and discussion

11:30 a.m. The Federal Perspective on the Regional Optometry Plan, Phil Hugill
- Discussion

12:00 noon Lunch, Women's Faculty Club
- Acting Dean Mandel will discuss the optometry program at Berkeley

1:15 p.m. Access and Admissions
- Description of program component
- Allocation of student numbers

1:45 p.m. Network of Clinical Placement Sites

2:00 p.m. Manpower Program

OVER

2:15 p.m.	Coffee and Small Group Discussions (topics: access and admissions, network and manpower program)
3:30 p.m.	Committee Reconvenes -Feedback from each of discussion groups -Comments and discussion
4:30 p.m.	Coordinating Mechanisms of the Regional Plan -School Coordinating Committee -State Coordinating Committee -Regional Advisory Committee
5:00 p.m.	Adjourn
6:30 p.m.	No host cocktails at Hs Lordships Restaurant
7:30 p.m.	Dinner at Hs Lordships Restaurant

Saturday, October 20

8:30 a.m.	Institutional Resource Sharing--Improving the Quality of Education
8:45 a.m.	Continuing Education and Other Consultative Services to States--Providing Expanded Services to Practitioners and the States
9:00 a.m.	Coffee
9:15 a.m.	Costing, Jim Topping -Historical cost of education -Costs of developing the new program elements -Costs of operating the regional program
10:30 a.m.	General Discussion of the Overall Plan -Approval to proceed with state review process
11:30 a.m.	The State Review Process -Description of the purpose of review -Presentation of the plan to states -Reports by each member of Advisory Committee on suggestions for review in member's own state
12:00 noon	Lunch at The Good Earth Restaurant and Tour of Facilities at University of California, Berkeley Campus
2:15 p.m.	Continuation of Member Reports on State Review Process
2:30 p.m.	WICHE Information Services--publicity and the state reviews
2:45 p.m.	General Comments and Questions
3:00 p.m.	Concluding remarks
3:15 p.m.	Adjourn

SUMMARY OF THE THIRD ADVISORY COMMITTEE MEETING

Project to Develop a Regional Plan for Optometry Education in the West

Berkeley, California

October 19 and 20, 1979

The meeting convened at 9:00 a.m. Friday, October 19, with those persons attending introducing themselves. All Advisory Committee members were present except Tadao Beppu, Emile Bernard, John Carr, Ron Fair, Glenn Hackney, Kristin Paulson, Robert Thomas, William Tietz, Robert Vander Meer, and Treasure Wheeler. Other persons attending were: Coy Gainey from Region X of the U.S. Department of Health, Education, and Welfare; Nate Watzman from the Bureau of Health Manpower (Phil Hugill, project officer was sick and unable to attend); Larry Clausen, assistant dean at Pacific University College of Optometry; Jim Topping from the National Center for Higher Education Management Systems, who is the cost consultant to the project; Gary Slaugh, practicing optometrist from Utah; Mert Flom, professor at the School of Optometry, University of California, Berkeley; Robert Mandell, acting dean at the School of Optometry, University of California, Berkeley; and WICHE staff: Phil Sirotkin, executive director; Susan Klein, project director; Trish Hermanson, Communications Office; Gloria Jimenez, staff associate; and Linda Dunham, secretary.

Susan Klein presented an overview of the products thus far produced through the project: the report Vision Manpower Needs in the Western States; the report Review of Regional Health Professional Programs; and the preliminary Plan for a Regional Program for Optometric Education in the Western Part of the United States. The purpose of this meeting was to refine the preliminary plan and to reach a consensus as to whether the refined plan should be presented to the states for their review.

Representatives of each of the three participating schools of optometry reported on the acceptance of the preliminary plan at their schools. Richard L. Hopping, president of Southern California College of Optometry, said that the faculty and the board of trustees support the basic concepts of this regionalization approach, and Willard B. Bleything, dean of Pacific University College of Optometry, said that the faculty and the board of trustees endorse a regional approach to optometry education. Darrell Carter, associate dean for student affairs at the University of California, Berkeley, said that although some faculty members are quite interested in the plan, others are not as interested because they are involved in national and international projects, and the administration is interested in how the plan will benefit the university.

Susan Klein said that a 3-month, no-cost extension was granted to the project to enable the three schools to be more involved in developing the plan; the final report is due in June 1980. She reviewed the purpose of the project, to develop a regional plan that meets the manpower needs of the western states and also the need for educational access for students of the western states. The manpower report showed that a serious maldistribution of eye care providers exists in the West.

She clarified that the preliminary plan has received approval from Phil Hugill. After the committee refines the plan and the states review it, it will go back to the Bureau of Health Manpower for final approval.

She reviewed the goals of the regional program, the program elements of the plan, and the project time line (see attached charts). Jim Boucher said that the subcommittees working on the preliminary plan this summer and considering costs were valuable in enabling large amounts of work to be done that could not have been accomplished by the larger advisory group. Members of those groups, which operated as one group, were: Dick Hopping, Donna Shepard, Wid Bleything, Darrell Carter, and Denis Curry; and WICHE staff members Phil Sirotkin, Bill McConnell and Susan Klein.

Susan Klein said that comments from Advisory Committee members on the manpower report can still be incorporated into the final report. Some members asked that the report stress that there is a maldistribution of optometrists rather than stressing that there is not a shortage of optometrists. The data and the analysis used in the study were praised as being more comprehensive and sophisticated than most manpower studies.

Those present broke into discussion groups to formulate questions and concerns about the preliminary plan to bring back to the larger group. The groups reported back to the large group the following questions and concerns:

1. How much will University of California, Berkeley (UCB) participate in the regional program and what will happen if it does not participate at the level of the other two schools?

2. On page 5, the statement "while there is not a shortage of optometrists in the West . . ." should be modified.

3. How does continuing education fit into the plan?

4. Should state optometric board representatives be on the state reviewing teams?

5. Is there an alternative to WICHE being the coordinating body in the plan?

6. Can the plan be implemented if one state decides not to participate?

7. Should alternative methods of vision care delivery other than the private practitioner model be included in the plan?

8. Does the plan provide a profit incentive to practitioners locating in shortage areas?

9. Does the plan address the professional jealousy between ophthalmologists and optometrists?

10. Why should the "have" states share with the "have-not" states?

11. Is there a mechanism in the plan to solve the need for health care delivery in rapidly impacted areas, such as energy development areas?

12. Is the data reasonably valid, best guess, or what?

13. How does the plan address access of minorities?

14. Is it reasonable to ask state and regional advisory board members to pay their own way to meetings?

15. The statement "single support fee mechanism needs to be developed" requires further explanation.

16. How does the single support fee relate to the cost of education at each school?

17. Are there legal implications in limiting enrollment based on geography?

18. How will the problem of maldistribution be corrected?

19. How is this program unique?

20. Should the plan's education centers be related to existing Area Health Education Centers (AHECs)?

21. Who will absorb the cost of developing new sites?

22. Will Wyoming accept the plan when it is already supporting more students than the manpower report indicates are needed in the state?

23. How will the plan become formalized?

In the revision of the plan, an attempt will be made to consider as many of these diverse questions and concerns as possible.

Nate Watzman cited examples of ways the Bureau has supported the concept of regionalization through projects it has funded. He said the Proposition 13 thinking and a concern about accountability pervade the Washington political scene so that funding is limited. The Bureau now can support just short-term projects, while Congress, not the Bureau, determines programming. Therefore, he suggested that implementation funding for the regional optometric education plan may best be available through Congressional earmarking. He suggested that for greater federal acceptance, the plan be written more specifically, e.g., identifying potential education sites where students might rotate.

Discussion followed as to how the plan could be written more specifically. To gain consensus among those writing the plan, some specificity was not written into it and those writing it believed that it would become more specific during the state review process. Edith Maddron said that greater specificity would be helpful concerning why the continuing education component of the plan is necessary, what kinds of continuing education are envisioned, and what trends are in the profession regarding continuing education.

Bill Phillips said that persons from potential sites that are not named in the plan will be offended if others are named. Dr. Lemoine suggested that the group attach an addendum to the plan that could include operational sites, and Larry Clausen said that this addendum could be included in the plan after the state review process.

In response to a question, Dick Hopping said that the Southern California School of Optometry (SCCO) has been involved in efforts to become part of the California state system, but said that if that were to occur, the school would still be able to serve regional admission needs and be part of the regional plan.

Discussion followed that the plan stress the underrepresentation of minorities in enrollments and that the State Coordinating Committee work to promote the profession and urge qualified minority students to attend optometry schools.

Members discussed the materials "Determination of Equitable Enrollments," including education costs per student, the final equitable number for use in the regional plan listed in table 3, and ratios of optometrists per 100,000 population.

As an introduction to discussion groups, members discussed clinical sites, continuing education, and institutional resource sharing. Susan Klein said that regarding the proposed cooperative network of off-campus clinical training sites, each school could maintain responsibility for clinics in five or six states, but they would work together in accepting students from other schools at the sites. She said that it is hoped that the ongoing operational cost of the regional program would allow for better supervision and more interaction between faculty of the schools and the sites, which would improve the quality of care. In the plan, students would be required to return to their home state or to another underserved area for at least one clinical rotation. Some research has shown that if the later stages of training are in students' home states, they are more likely to practice there.

Wid Bleything said that the closer the sites could be to the home bases of the students, the less of a burden it would be on the students because they would not have to maintain two households. Larry Clausen added that at Pacific University, fourth-year students going to clinical sites began to identify with the locale and became interested in the community as a potential place to practice.

Susan Klein said that the regional plan also recommends that the three schools coordinate their placement activities and the schools could use a computerized data base, such as the National Health Professional Placement Network at the University of Minnesota, to help match community needs with graduating students. She added that the clinical sites have the potential of providing clinically-based continuing education activities.

Regarding institutional resource sharing, Larry Clausen discussed faculty development possibilities, joint residency programs, sharing of materials such as audio/visual aids, sharing of library resources, and joint workshops and retreats.

The small groups convened to discuss these components of the plan: clinical sites, access and admissions, and institutional resource sharing. Through Donna Shepard, the group considering the proposed network of clinical sites:

1. Recommended that wording be strengthened concerning the schools coordinating their policies to place fourth-year students in off-campus clinical training sites located in the students' home states.

2. Suggested that the plan address how the network of clinical sites will reach both rural and inner-city underserved areas.

3. Recommended that the list of groups to be contacted be expanded to include Civilian Health and Medical Program of the Uniformed Services (CHAMPUS), the Veterans' Administration, Health Maintenance Organizations, state agencies, and perhaps national organizations such as the Lions Club, Delta Gamma, and the Jaycees.

4. Suggested that the clinical sites be used for recruitment, particularly of minorities.

5. Questioned whether the cost of the clinical sites should be included in the basic cost to the states.

6. Regarding manpower, recommended that the report consider paraprofessionals and that it outline programs that could be engaged in to promote minority involvement in optometry education.

7. Questioned the effectiveness of a data-based system to provide graduating students with greater access to information about communities needing optometrists.

8. Reco-mended that the fifth column of table 3 in the materials "Determination of Equitable Enrollments" be modified.

Through Jim Boucher, the discussion group considering access and admissions:

1. Suggested that any recruitment through the regional plan be coordinated with recruitment done through other organizations.

2. Recommended that the plan incorporate preoptometry feeder programs by ensuring that all colleges and universities in the region list preoptometry programs in their catalogs and that a person on each campus be designated as a preoptometry advisor.

3. Suggested that the report discuss recruitment costs.

4. Recommended that column 5 of table 3 be left blank.

5. Suggested that in discussing admissions and access figures, the report enunciate factors that have been included in tabluating those figures.

Through Jesse Beasley, the group considering institutional resource sharing recommended the following types of sharing:

1. Short-term exchanges of faculty for one month or exchanges of clinical faculty for two weeks.

2. Joint residency programs.

3. Joint affiliation programs.

4. Media exchanges.

5. Support of students to enter the UCB Ph.D. program.

6. Joint creation of a clinical education package.

7. Teaching centers as sources of consultative services to practitioners.

On Saturday, October 20, the group reconvened, discussing the state review process of the plan. Susan Klein said that under its contract, WICHE is required to conduct state reviews of the plan. However, because implementation money would most likely come through Congressional earmarking and it would not be within WICHE's scope to seek that type of implementation money, she suggested that a less formal review within each state would be more appropriate.

Donna Shepard suggested that a representative of the governor's office from each state be included in the state review, and Dr. Lemoine recommended that a representative of each state's medical society be included.

Members agreed that WICHE should be the coordinating body of the plan because it is regional and because it is recognized by the states. If WICHE does not become the coordinating body for the plan, Donna Shepard suggested that as an alternative, the three optometry schools could act as the coordinating body. Larry Clausen said that with this alternative, implementation costs would be higher.

Members suggested that the plan stress maldistribution and include examples of underserved areas where possible. Jesse Beasley said that incentives need to be provided to recruit persons to practice in underserved areas.

In the group's discussion of the coordinating committees of the regional plan, Wid Bleything expressed concern as to whether those on the committees could travel at their own expense. Susan Klein said the committees were patterned after the CSU regional veterinary medicine program advisory committee, where participants do pay their own way, and Phil Sirotkin added that attendance at these meetings has been exceptional. He said that for those who cannot pay their own expenses, they get funding from their states. Gary Slaugh said that state associations would fund such travel.

Jim Topping discussed the materials "Notes to Cost-of-Optometric Education Survey" dated October 1, 1979, including the tables "Projection of Historical Costs Based on Financial Data from Fiscal Year 1978-79" and the "Computation of Weighted Averages for the Three Optometry Programs Fiscal Year 1978-79."

Dr. Lemoine moved and Jim Boucher seconded a motion that the Advisory Committee of the Regional Optometric Education Project support the programmatic elements expressed in the draft October 1, 1979, entitled Plan for a Regional Program for Optometric Education in the Western Part of the United States and recommends the Commissioners of WICHE continue their support for this program effort including a search for funds, according to WICHE policy, to implement the developmental phase. The Committee unanimously passed the motion.

Jim Boucher moved and Jesse Beasley seconded a motion that the Advisory Committee to the Regional Optometric Education Project requests assistance from the Association of Schools and Colleges of Optometry (ASCO) and the American Optometric Association (AOA) relative to the search for funds to implement the developmental stages of the project. The Committee passed the motion unanimously. Jim Boucher asked Dick Hopping to chair an ad hoc committee to seek Congressionally earmarked implementation funding. Dick Hopping agreed and asked Jim Boucher, Larry Clausen, and Wid Bleything to join that committee.

Several members said that it would be helpful to them to have a presentation of the regional plan when they talk to persons in their home states. Dick Hopping suggested that the presentation include the refined plan, the action of the WICHE Commission in December, the proposal that will go to the Bureau, and the work of ASCO and the AOA regarding the plan.

Susan Klein asked the members for suggestions as to how the plan should be reviewed in their states. Bill Phillips suggested that the head of the state optometric association, the three WICHE Commissioners, the SHEEO and WICHE certifying officer, an Advisory Committee member, and a key person from the legislature and from the university be convened for an informal talk and that the plan would best be implemented in Arizona by raising the WICHE support fee.

Edith Maddron said that she would consult with the staff of the Oregon Educational Coordinating Commission to draw names of persons to attend a review of the plan. She suggested that Jason Boe, president of the Oregon Senate and immediate past president of the National Conference of State Legislatures, be included in the review session, as well as a member of the optometry profession, the new president of the Health Sciences Center, and a representative of the Department of Education concerned with the needs of handicapped children. She said that she will brief Roy Lieuallen, chancellor of the Oregon State System of Higher Education and a WICHE Commissioner, prior to the Commission's meeting in December.

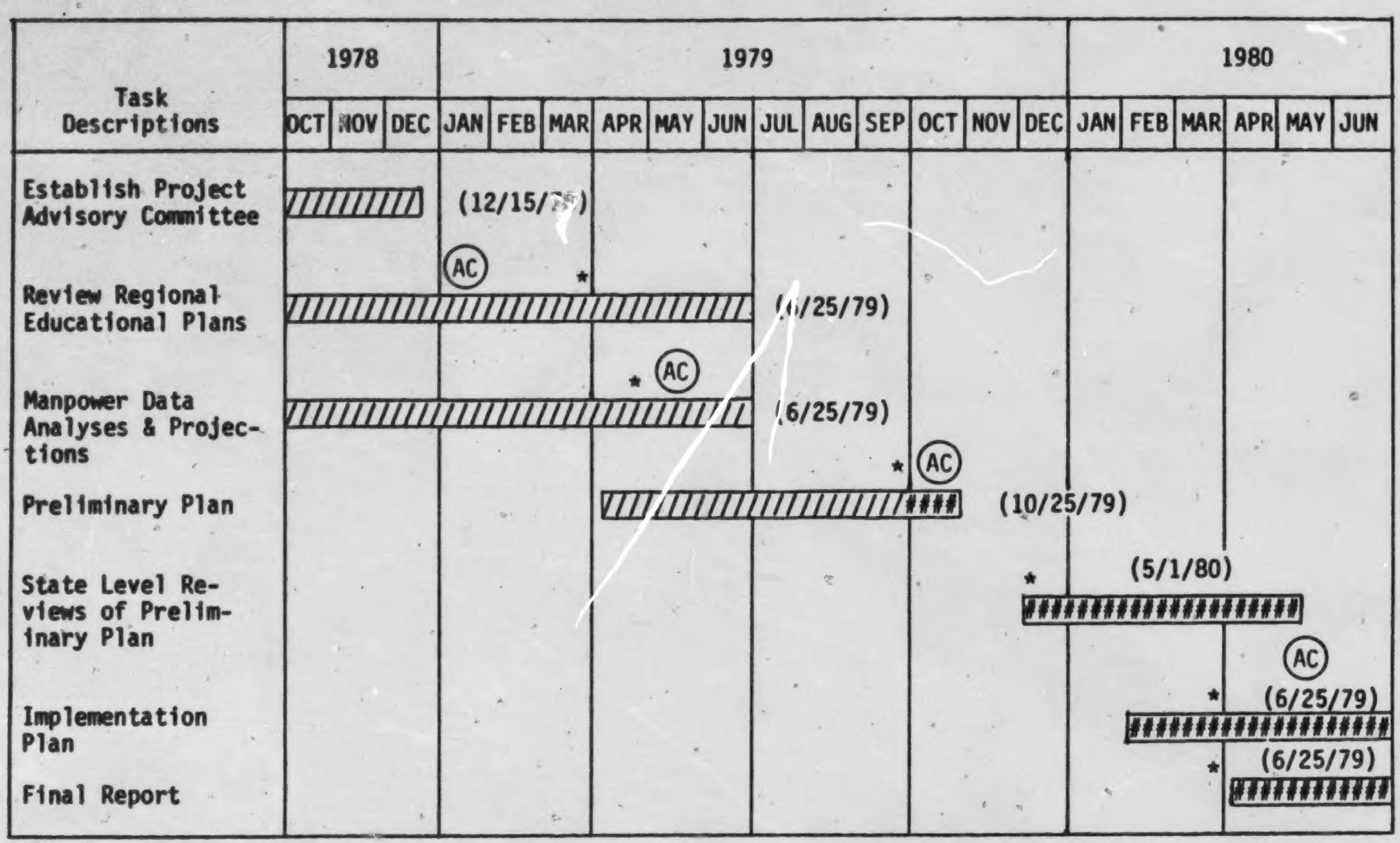
Mardoqueo Chacon suggested that the review in New Mexico include a representative of the medical society and the governor's office. Susan Klein said that she had corresponded with the governor's wife, who has expressed interest in disabilities of children.

Jesse Beasley said that he will work with Dick Hopping to compose a list of persons to be included in the review process, including a representative of the governor's office, the state board, and the state association. David Grover said that he would suggest representatives from the Department of Finance, the Legislative Analyst's Office, the Office of Health Professions Development in state-wide health planning development, a representative from the university involved in health affairs, and the legislator who chairs the assembly subcommittee on health manpower, who is also an optometrist.

Gary Slaugh said that he will convene the secretary to the Commissioner of Higher Education, a member of the governor's staff, and political analysts. Donna Shepard said that the review should take place when the legislature is in session, between January and mid-March. She suggested that legislators, a representative of the governor's office, and the Office of Higher Education be included. Jim Boucher said that he and Dick Neibaur will meet with WICHE's certifying officer to compose a list of persons to attend the review.

Members of the Committee toured the facilities of the School of Optometry at UCB at the close of this third Advisory Committee meeting.

REGIONAL OPTOMETRY PROJECT PERFORMANCE



Legend

▨ Completed

▨ Partially Completed

▩ Not Started

(AC) indicates Advisory Committee meeting

*Denotes original due date

RELATIONSHIP OF ELEMENTS OF THE PROPOSED REGIONAL PLAN IN OPTOMETRY TO THE PLAN'S OBJECTIVES

Regional Program Elements

Objectives	Access & Admissions	Clinical Network	Manpower Program	Continuing Educational Consultation	Institutional Resource Sharing	Financial Plan
1. Educational Opportunity	X					
2. Manpower Supply & Distribution	X	X	X			
3. Primary Vision Services		X	X	X		
4. Quality of Optometric Education					X	
5. Financial Stability of Schools						X

AGENDA

Advisory Committee

WICHE Regional Optometry Education Project
May 14 & 15, 1980
WICHE Conference Room
Boulder, Colorado

Wednesday, May 14

8:10-8:30 a.m.	Shuttle bus from the Broker Inn to WICHE offices
8:30 a.m.	Continental breakfast
9:00 a.m.	Brief review of project since last meeting of Advisory Committee
9:15 a.m.	Discussion of the state reviews -How the plan was presented to the states -Comments by Advisory Committee members -What are the pluses and minuses of the plan from the state side
11:00 a.m.	Break
11:15 a.m.	Does the proposed regional plan fit with the AOA Master Plan? (Jim Boucher and Dick Hopping)
11:30 a.m.	Review and confirm approval of Regional Plan and Phased Implementation
12:00 p.m.	Report on the potential for outside fundings for implementation (Lee Smith, Dick Hopping, Wid Bleything)
12:30 p.m.	Lunch
1:15 p.m.	Discussion of steps to be taken in the future/Contingency Planning Issues to be discussed could include, but are not limited to: -Factors affecting implementation -What steps can be taken to keep plan alive until funding is obtained? -Other sources for funding? -Could some of plan's recommendations be pursued by individual schools? -What role could state associations play?
4:45 p.m.	Adjourn
6:30 p.m.	No-host cocktails in the Gazebo Lounge at the Broker
7:15 p.m.	Dinner at the Broker

OVER

AGENDA

Thursday, May 15

8:10-8:30 a.m.	Shuttle bus to WICHE
8:30 a.m.	Continental breakfast
8:45 a.m.	Reactions and recommendations from state representatives
9:45 a.m.	Reactions from the three schools
10:45 a.m.	Next steps: -Intentions of schools -Role of WICHE -Report back to states (participants in state reviews) -Report to WICHE Commission -Final report to Bureau of Health Manpower
1:00 p.m.	Lunch Adjourn

SUMMARY OF THE FINAL ADVISORY COMMITTEE MEETING

Project to Develop a Regional Plan for Optometry Education in the West

WICHE Conference Room
Boulder, Colorado
May 14 & 15, 1980

The Advisory Committee Meeting on Optometry convened at 9:00 a.m. on Wednesday, May 14. Advisory Committee members in attendance included Emile J. Bernard, Jr., James Boucher, Mardoqueo Chacon, Ron Fair, David Grover, Dr. Albert Lemoine, Edith Maddron, Donna Shepard, Lee W. Smith, William J. Tietz, Gary Slaugh, and Mrs. Abelina Shaw, who replaced Tadao Beppu. The optometry schools were represented by Willard Bleything, Darrell Carter, and Richard L. Hopping. WICHE staff present included Phil Sirotkin, Susan Klein, Bill McConnell, and Gloria Jimenez.

Susan Klein indicated that the meeting would cover the following items:

1. Summary of the state review process,
2. Discussion of the proposed Regional Plan as it relates to the American Optometry Association Master Plan,
3. Review and approval of the Regional Plan and phased implementation,
4. Report on the potential for outside fundings for implementation,
5. Discussion of steps to be taken in the future/contingency planning,
6. Reactions and recommendations from state representatives, and
7. Reactions from the three schools.

Phil Sirotkin reviewed the general reaction of the WICHE Commission to the Optometry Project. The Commission accepted the resolution from the Committee for permission to seek funds for implementation. Dr. Sirotkin noted that some concern was raised about the appropriateness of WICHE's assuming lead responsibility for implementation. He stated that a total of 19 Commissioners were involved in the state review process, which led to a much greater understanding by the Commission of the importance and value of a regional approach in relation to the region's vision care needs.

Phil Sirotkin and Susan Klein summarized the state reviews in terms of the types of representatives who participated and the pros and cons raised in each state meeting (see attached summaries). Advisory Committee members joined in this discussion. California, Colorado, and Montana expressed a real concern about the recruitment of minorities in the field. Donna Shepard (Idaho) commented that after the state review, the Board approved an additional student in optometry in Idaho. However, in Oregon, the number supported in optometry through the Professional Student Exchange Program was cut back on the basis of the WICHE manpower report. Generally, the state reviews were positive and showed support for the various components of the Regional Plan.

Jim Boucher, Advisory Committee member from Wyoming and American Optometry Association trustee, led the discussion about how the proposed Regional Plan relates to the American Optometry Association "Master Plan." In his opinion, the Board supports the regionalization plan with one exception: the AOA Plan endorses the need for increasing the number of schools, with one in the WICHE region. The American Optometry Association is, however, in the process of reviewing that document, and it was Jim's impression that the Board of Trustees should modify its plan in order to support the regional optometric education project as developed by WICHE.

There was considerable discussion, initiated by Ron Fair, about factors which might eventually lead to the need for new schools in the region. Ron Fair suggested that the language in the Regional Plan (Appendix B, page 3 in the Preliminary Plan) needs to include a statement that no new schools are needed "at this time."

A question was raised about the need to present a phased schedule for implementing the Regional Plan. A motion was introduced by Albert Lemoine, seconded by David Grover, and passed unanimously, stating, "The Advisory Committee approved the Regional Plan for Optometric Education in the West with a phased schedule for implementation." The Committee also recommended that language in the Plan be changed to say that no new schools are needed at this time.

Lee Smith and Dick Hopping reviewed the probabilities of obtaining federal funding for implementation. Lee Smith began with an update of actions taken following the last meeting to gain Congressional support for funding. He reviewed the options for funding, including obtaining funding through the 1980 Supplemental Budget, year-end funds from HRA, or through new health manpower legislation. A motion was introduced by William Tietz, seconded by Albert Lemoine, and passed unanimously, stating,

> The Optometry Project Advisory Committee recommends to the WICHE Commission that WICHE pursue funding from appropriate sources to implement the proposed Regional Plan for Optometric Education on a timely basis.

Other potential funding sources were suggested that might fund implementation of the Regional Plan (i.e., the Kellogg Foundation). The Committee was particularly concerned that the Plan be kept alive and that the momentum gained with this contract not be lost.

The need to communicate with participants in the thirteen state review meetings was also discussed. It was recommended that these people be sent a letter summarizing the state reviews, the recommendations of the Advisory Committee, and the Implementation Plan.

Other measures to keep the Plan alive until implementation funding is found were discussed. A motion was introduced by Dick Hopping, seconded by Edith Maddron, and passed unanimously, reading,

> The Optometry Project Advisory Committee requests the WICHE Commission to appoint a Regional Advisory Committee for Optometric Education, patterned after the Regional Veterinary Council.

In addition, a motion was proposed by Ron Fair, seconded by Emile Bernard, and passed unanimously, stating that the WICHE Project Director shall write to request that state optometric associations pass a resolution endorsing the Regional Plan. Discussion of the Plan's future included: the role of WICHE, the role of the proposed Regional Advisory Committee, and the responsibility of the schools.

The meeting on May 15 convened at about 9:00 a.m. Susan Klein began the meeting by expressing her appreciation to the Committee members for their participation in the Project.

She then asked that state representatives summarize what actions could be taken in their respective states to maintain interest in the Plan until implementation funding is found. Suggestions included: follow-up contact with people who participated in the state review meetings, requesting a formal resolution from state optometric associations, educating health planners, having the numbers from the manpower report included in state health plans, appointing a Regional Advisory Committee, and helping to identify unmet vision needs and potential clinical sites.

Other members of the Committee were asked their opinions about what could be done to pursue the concept of the Plan. Representatives of the three schools talked about the value that they saw in the Plan as well as in the process of its development--i.e., the role of the Advisory Committee, the increased communication among the schools, the value of the manpower plan.

Mechanisms for pursuing Plan implementation were discussed. The Committee created an Ad Hoc Steering Committee; this Committee will be chaired by Gary Slaugh, O.D., and will include Drs. Fair and Boucher and representatives of the three schools and of WICHE. This group will meet in Denver at the end of June to discuss the action taken by the WICHE Commission regarding creation of a Regional Council and other measures which could be taken to ensure implementation of the Plan.

REPRESENTED AT THE STATE REVIEW

State	WICHE Commissioners	Advisory Committee Members	SHEEO's State Education Agency	State Legislators	Legislative Staff	Executive Staff	State Optometry Associations	Optometry School Representatives	WICHE Staff	Health Department or HSA or SHPDA	Certifying Officer	Other
Alaska	X	X	X	X	X	X	X		Phil Sirotkin	X	X	Pat Saiki, Hawaii State Senator
Arizona		X					X		Susan Klein		X	
California	X	X	X		X		X	Dick Hopping (SCCO) Darrell Carter (U of CA)	Phil Sirotkin Susan Klein	X		
Colorado		X	X		X	X	X	Wid Bleything (PU)	Phil Sirotkin Bill McConnell Gloria Jimenez			
Hawaii	X	X		X			X	Wid Bleything (PU)	Susan Klein	X		Optometry Student
Idaho	X	X	X	X	X	X	X	Larry Clausen (PU)	Phil Sirotkin Susan Klein Bill McConnell	X	X	
Montana	X	X	X	X			X	Larry Clausen (PU)	Susan Klein	X	X	President, Montana State University WAMI, Montana State University
Nevada	X	X		X	X	X	X	Dick Hopping (SCCO)	Bill McConnell	X	X	Bureau of Services to the Blind
New Mexico	X	X	X		X	X	X	Dick Hopping (SCCO)	Bill McConnell	X	X	Public School Finance
Oregon	X	X	X	X			X	James Miller Wid Bleything (PU) Larry Clausen (PU)	Bill McConnell	X	X	
Utah	X	X	X	X	X	X	X		Phil Sirotkin Susan Klein		X	
Washington	X		X	X	X	X	X	Wid Bleything (PU) Larry Clausen (PU)	Phil Sirotkin Susan Klein	X		
Wyoming	X	X	X				X	Larry Clausen (PU)	Phil Sirotkin	X	X	

STATE REACTIONS TO REGIONAL PLAN

STATE	POSITIVE VALUE/ATTRACTION OF PLAN	POSSIBLE PROBLEMS OR CONCERNS
Alaska	● value of additional clinical site to serve rural areas ● need to attract practitioners into remote areas	
Arizona	● some in profession see value of clinical site ● program could help recruit and counsel pre-optometry students ● PSEP support fees could be increased substantially to support plan development	● low rate of acceptance of Arizona students by schools of optometry ● relative low level of support for social welfare programs, e.g., no Medicaid ● problem to find funding to develop clinical site
California	● possibility of addressing underrepresentation of minorities in profession ● delivery of care to underserved populations; particularly minority and inner city	● outside funding for development would make program more attractive ● potential for California to become a sending state for field of optometry
Colorado	● state is positive toward "regional concept" ● guaranteed return of students to practice in underserved areas	● need to clarify a successful strategy to recruit minorities
Hawaii	● interest in value of additional clinical placement ● value of State Coordinating Committee in which profession could be involved	
Idaho	● development of coordinated system to respond to students seeking practice opportunities-value of regional data-based placement service ● services that could be provided by clinic to underserved groups; particularly migrants and developmentally disable ● potential for clinically-based continuing education and value to practitioners of contacts with students ● state generally endorses regional concept	● how can plan/clinic address totality of state's needs-especially in rural areas ● cost can be a barrier
Montana	● potential sites include State School for Blind, University-affiliated Program for the Developmentally Disabled at University of Montana, VA Hospital in Helena, Boulder Hospital for the Retarded ● state generally endorses value of regionalism ● potential for improved continuing education; the idea of optometric education center was raised, with possibility of linking with medical division of CE at MSU ● increased communication between schools and state	● recent drop in number of optometry applicants seeking certification (not necessarily a problem because of high O.D. ratio in state). ● questionable ability of clinical site to deal with dispersed population (enough patients in one place?) ● concern that clinical sites serve primarily an educational purpose and not "use" students

STATE REACTIONS TO REGIONAL PLAN
(Continued)

STATE	POSITIVE VALUE/ATTRACTION OF PLAN	POSSIBLE PROBLEMS OR CONCERNS
Nevada	• possibility for developing another clinical site • increased communication between schools and state	• most students return to practice in state and most communities that can support an O.D. have one
New Mexico	• possibility to enroll all students in Western Schools of Optometry, and perhaps decrease total number supported to off-set operational costs of regional plan	• Practitioners question if there are enough sites that could economically support more O.D.'s if the state's ratio increases to 11.4
Oregon	• clinical site to meet unserved needs could be a selling point • potential for improved continuing education to practitioners • support for "regional" concept	• cost could be a problem
Utah	• on-site clinical facilities will attract students back to Utah • properly situated clinic could serve unmet need in rural areas • potential for clinically based CE • need for support for greater number of students recognized	• cost of establishing clinic • questionable support for more students • question of "servitude" or shifting of resources to justify funding
Washington	• additional training sites in underserved areas • possible mechanism for retaining graduates for practice in the state	• uncertainly about substantially increasing the number of state supported students
Wyoming	• possibility of having a clinical training site for both services and continuing education	• loss of flexibility in current bilateral contracts with the two private schools

ADDENDUM C

MATERIALS USED IN STATE REVIEWS

SAMPLE AGENDA FOR STATE REVIEWS OF REGIONAL PLAN

AGENDA

Hawaii State Review of Proposed Regional Optometry Plan

Meeting: State Department of Health Building
Boardroom - 1250 Punchbowl Street
Honolulu, Hawaii

Time: Monday, April 28, 1980
4:30 p.m.

1. Review and discussion of the major elements of the plan
    - Project objectives
    - Key components of the plan
        - -Access and admissions
        - -Network of off-campus clinical training sites
        - -Manpower program
        - -Institutional resources sharing
        - -Financial plan
        - -Implementation and administration
    - Specific benefits of the plan to Hawaii
2. Assessment of:
    - Hawaii's interest in participating in the proposed plan
        - -Number of students the state is willing to support
        - -Perceived need for clinical training site/unmet need
        - -Procedure that would be necessary to formally gain the state's participation (e.g., steps, timetable)
    - Resources available in the state to support the regional plan
        - -Potential clinical training site
        - -Role or interests of optometric association, state health department or HSA

ADDENDUM C
(Continued)

LIST OF PARTICIPANTS IN STATE REVIEWS

LIST OF PARTICIPANTS IN STATE REVIEWS

ALASKA

Senator Glenn Hackney, Chairman
Alaska Senate Committee on Health,
Education & Social Services
WICHE Commissioner
Advisory Committee Member

Pat Carney
State Representative

Ms. Hali Denton
Aide to Representative Pappy Moss

Ms. Kathy Johnson, Director
Alaska Native Health Career Program
Under Rural Education
University of Alaska

James Matson
Optometrist

Ms. Jane Maynard
WICHE Coordinator
Postsecondary Education Commission

Representative Brian Rogers
Fairbanks

Dr. Kerry Romesburg, Executive Director
Postsecondary Education Commission
WICHE Certifying Officer
SHEEO
WICHE Commissioner

Pat Saiki
Hawaii State Senator
Chairman, WICHE Commission

Dave Scott
Fiscal Analyst for the Legislature

Frank Spargo
Budget Analyst
Governor's Office

David Spence, Pediatrician
Division of Public Health
Department of Health and Social Services

Arliss Sturgulewski
State Senator

Phil Sirotkin, Executive Director
WICHE

ARIZONA

William B. Phillips
Academic Planning Coordinator
Arizona Board of Regents
Advisory Committee Member

Odus Elliott
WICHE Certifying Officer

Bob Maynard
Past President
Arizona Optometry Association

Selma Pine, Executive Director
Arizona State Optometric Association

Susan Klein, Director
WICHE Optometry Project

CALIFORNIA

Pat Callan, Director
California Postsecondary Education Commission
SHEEO
WICHE Commissioner

Martha Zaragosa, Consultant
Assembly Subcommittee on Health Personnel

Hal Geiogue
Principal Program Analyst
Legislative Budget Committee

Bill Barrett
Office of Statewide Health Planning & Development

Ernest Takahashi
State Board of Optometry

Richard L. Hopping, President
Southern California College of Optometry

Darrell Carter, Assistant Dean
University of California, Berkeley
School of Optometry

Rosalyn Elms, Consultant
Assembly Subcommittee on Postsecondary Education

Keith Pailthorp
California Postsecondary Education Commission, Staff

David Grover
California Postsecondary Education Commission, Staff
Advisory Committee Member

Suzanne Ness
California Postsecondary Education Commission, Staff

Phil Sirotkin, Executive Director
WICHE

Susan Klein, Director
WICHE Optometry Project

COLORADO

Charles Manning, Associate Director
Colorado Commission on Higher Education

Willard Bleything, Dean
Pacific University College of Optometry

Dan Chapman
Colorado Legislative Council

Stan Elofsen
Colorado Legislative Council

Ron Fair
Optometrist
Advisory Committee Member

Lee Kerschner, Executive Director
Colorado Commission on Higher Education
SHEEO

Bill O'Rourke, Director
Colorado Optometric Association

Jim Perrin
Office of State Planning & Budgeting

Phil Sirotkin, Executive Director
WICHE

Bill McConnell, Director
Student Exchange Program
WICHE

Gloria Jimenez, Staff Associate
Student Exchange Program
WICHE

HAWAII

Pat Saiki
Hawaii State Senator
Chairman, WICHE Commission

Abelina Shaw, Deputy Director
Health Department
Advisory Committee Member

Robert Chang
Optometrist

Kin M. Ching
Optometrist

Roger Ede
Optometrist

Kenneth Fujimoto
Optometrist

Arthur Kobayashi
Optometrist

Dennis Kuwabara
Optometrist

Wayne Matsuyama
Optometrist

Clarence Murata
Optometrist

Kensey S. Inouye
Optometrist

David L. Fairbanks
WICHE Commissioner

Patrick Nam
Optometrist

Guy Nishizawa
Optometrist

Seizen Oshiro
Optometrist

Ronald Reynolds
Optometrist

Edwin Takahashi
Optometrist

Chris Yamamoto
Student

Stanley J. Yamane
Optometrist

Willard Bleything, Dean
Pacific University College of Optometry

Susan Klein, Director
WICHE Optometry Project

Vernon I. Shibata
Optometrist

IDAHO

Beverly Bistline
WICHE Commissioner

Martha Jones, M.D.
WICHE Commissioner

Donna Shepard
Senior Fiscal Analyst
Idaho Legislative Fiscal Office
Advisory Committee Member

Clifford Trump
Deputy Director for
Academic Planning
State Board of Education
WICHE Certifying Officer

Milton Small, Director
SHEEO

Ralph Olmstead, Speaker
House of Representatives

Mark Toledo
Assistant to the Governor

Shirley Mix, Executive Director
Idaho Optometric Association

Dr. Vassir
Idaho Optometric Association

Dr. Robert Turner
Idaho Optometric Association

Idaho - continued

Milton Klein, Director
Department of Health & Welfare

John Barker, Chairman
State Senator
Senate Health and Welfare Committee

Mike P. Mitchell
State Senator

Susan Klein, Director
WICHE Optometry Project

Darlene Foukel
Office of Secretary
State Board of Education

Larry Clausen, Assistant Dean
Pacific University College of Optometry

Phil Sirotkin, Executive Director
WICHE

Bill McConnell, Director
Student Exchange Program
WICHE

MONTANA

Irving Dayton, Deputy Commissioner
for Academic Affairs

William J. Tietz, President
Montana State University
Advisory Committee Member

John Anderson
Department of Health &
Environmental Sciences

Ralph Gildroy
Health Services Agency

Frank Newman
WAMI at Montana State University

Bill Thomas
State Senator
WICHE Commissioner

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WICHE Commissioner

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Bureau of Services to the Blind

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Nevada Optometric Association

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Nevada Optometric State Board of
Examiners

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Optometrist

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Southern California College
of Optometry

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Student Exchange Program
WICHE

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Legislative Council Service

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Public School Finance
Department of Finance and Administration

Walt Eisenberg
Governor's Office

Ms. Mickey Stuart
Administrative Assistant
Department of Health & Environment

New Mexico - continued

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State Optometric Association

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Southern California College
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Bill McConnell, Director
Student Exchange Program
WICHE

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Commission
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Pacific University

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Pacific University College of Optometry

Larry Clausen, Assistant Dean
Pacific University College of Optometry

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Student Exchange Program
WICHE

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Oregon Education Coord. Commission

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Utah State Board of Regents
WICHE Commissioner
WICHE Certifying Officer
SHEEO

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Deputy Commissioner
Utah State Higher Education

Heber T. Hunt
Senior Fiscal Analyst
Office of Legislative Analyst

Gary Slaugh, President
State Optometric Association
Advisory Committee Member

John Thompson
Representing Kent Briggs
State Planning Coordination

Utah - continued

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Research Analyst
Office of Legislative Research

Lu Larson, Secretary

Phil Sirotkin, Executive Director
WICHE

Susan Klein, Director
WICHE Optometry Project

WASHINGTON

C. Gail Norris, Executive Coordinator
Washington Council for Postsecondary Education

Willard Bleything, Dean
Pacific University College of Optometry

Larry Clausen, Assistant Dean
Pacific University College of Optometry

Ron Bussinger, President
Washington Optometric Association

William Chance, Deputy Coordinator for Academic Affairs
Washington Council for Postsecondary Education

Lin Floyd
State Higher Education Committee

Tom Galbraith
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Delores Teutsch
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Frederick Thieme
Curator for the Burke Museum
WICHE Commissioner

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Washington Council for Postsecondary Education

Lyle Jacobsen, Director
Office of Financial Management

Steve Jaffe
Optometrist

Mike Kreidler
State Representative

Shirley Ort, Associate Coordinator for Financial Assistance
Washington Council for Postsecondary Education

William Robinson
Office of Financial Management

Patricia Starzyk
Center for Health Statistics
Department of Social & Health Services

Glenn Terrell, President
Washington State University
WICHE Commissioner

Phil Sirotkin, Executive Director
WICHE

Susan Klein, Director
WICHE Optometry Project

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Optometrist
Member, State Health Planning Agency

WYOMING

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Optometrist
Advisory Committee Member

James Hollon, President
Wyoming Optometric Association

Edward Jenning, President
University of Wyoming
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SHEEO

Dan Lex, Executive Director
Wyoming Health Care Association

Richard Neibaur, Director
Wyoming Health Systems Agency
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WICHE Certifying Officer

Phil Sirotkin, Executive Director
WICHE

ADDENDUM C
(Continued)

STATE-SPECIFIC DESCRIPTIONS OF REGIONAL PLAN USED IN STATE REVIEWS

WICHE
Improving Education In The West

THE REGIONAL PLAN AS IT APPLIES TO ALASKA

The Role of Optometry

Optometrists are experts in measuring human vision; they are educated, trained and licensed to examine the eye and diagnose vision malfunctions or abnormalities. The optometrist prescribes and adapts lenses and other optical aids, and may utilize vision training to improve vision efficiency. Although optometrists represent only a small proportion of all health practitioners, they play a very significant role in providing primary vision care services.

Why a Regional Plan?

A regional approach is the most cost-effective way to meet the education and manpower needs of the western states, and prevent unnecessary duplication of educational facilities and programs. The advantage of a regional approach as a solution to meeting primary vision care needs, are discussed in the proposed WICHE Regional Plan for Optometric Education in the West (for further details see enclosed document dated January 23). Components of the proposed plan address major areas of regional concern and enactment of the plan can be responsive to the diverse needs of a particular state and the region itself. Goals of the program are:

- Provision of educational opportunity to qualified students whether or not their home state has a college of optometry.
- Provision and maintenance of an adequate supply of optometric manpower appropriately distributed within the western region.
- Improvement in the delivery of primary vision services to the public.
- Enhancement of the quality of optometric education.
- Assurance of the financial stability of the optometric schools in the WICHE region in carrying out the various components of the regional plan.

The Existing Professional Student Exchange Program

The proposed regional plan is designed to deal with each state's need for optometric education and manpower. Access to optometric education for Alaska residents is currently provided through the WICHE Professional Student Exchange Program (PSEP); only an occasional Alaska resident enrolls in optometric education outside the region or without the assistance of PSEP.

Under the PSEP, Alaska residents apply to the Alaska Certifying Officer for certification of their eligibility for the program; the candidate also applies for admission to one or more of the three western optometry schools. Students enrolled under the program pay resident tuition in the public school (the University of California, Berkeley, School of Optometry) or one-third of the regular tuition in the private schools (Pacific University or Southern California College of Optometry). Alaska pays, through WICHE, a cost-of-education fee to the school which is set by the WICHE Commission. In 1979-80 the cost of education in optometry is $4,500 per student per year.

Benefits of the Regional Plan to Alaska

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be supported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP.

In comparison with other western states, Alaska has generated proportionately fewer total applicants through the WICHE Professional Student Exchange Program. However, any certified student who has been admitted to optometry school has been supported by the state. It may be appropriate for the state to consider recruiting and supporting an additional number of students--particularly minority students to serve the Native population.

For Alaska the 1978 ratio of optometrists to 100,000 population was 9.2 in comparison to the WICHE regional average of 11.4. This 1976 ratio is nearly double the 1973 level of 5.5. The current ratio of ophthalmologists was 2.5 so that the combined (O.D. + M.D.) ratio of vision care providers was about 11.7 per 100,000 (the regional average is 16.4).

Based on the state's current enrollment trend and assuming all these students return to Alaska and practice there, and no in-migration of optometrists occurs, the ratio of optometrists to population is projected to increase slightly by the year 2000. Under these assumptions, if Alaska wished to attain the current regional average supply of optometrists by 2000, the state would need to support somewhat more students.

Recent migration of optometrists to Alaska has been estimated to be high--about seventeen over the last five years. In fact, the state's supply of optometrists has resulted more from in-migration than from Alaskan students returning to practice. If this migration pattern were to continue, and students continued to return to the state to practice at the same rate as they have, the ratio of optometrists to population would be 21.4 by the year 2000. Because of the "post pipeline slump" in Alaska's economy, it is very unlikely that this in-migration will persist. In fact, the optometric association has recently reported that two optometrists have migrated out of the state, and that only thirty-five remain. This would mean that the current ratio is only 8.6. However, the Alaska State Medical Association shows a gain in number of ophthalmologists to 4.9 per 100,000. The combined ratio (O.D. + M.D.) would be 13.5 per 100,000 and show a higher ratio of ophthalmologists to optometrists (.57) than reported earlier.

It is difficult to judge what a desirable ratio of optometrists to population would be for a state like Alaska. Access to care is made difficult by severe weather, population sparsity, and a lack of roads. Many optometrists have provided care as itinerants for remote areas. Travel expenses make delivering care very expensive. Because of the sparsity of the population there are probably few additional communities which could support a fee-for-service optometrist.

Perhaps the greatest unmet vision needs exist in the Native population. Only one of the twelve Native Health Corporations has hired an optometrist, although others are interested. In 1978, the Indian Health Service estimated there were 71,200 Natives in Alaska. Its Systems Development Office in Anchorage showed a need for twenty optometric positions (including assistants) and only four positions were authorized. In some northern communities, vision aides who have had only a few weeks of training try to do the work of an optometrist. Vision care usually assumes a low priority in the face of more pressing health problems.

The regional plan calls for establishing a school-sponsored clinical training site in each participating state. One such site now exists in Alaska (at the Native American Health Center in Anchorage). By having part of their optometric training in their home states, students are encouraged to return there to practice. If students are exposed to the itinerant mode of practice and the needs which exist in very remote areas, they may be more likely to provide services in these areas when they are licensed. Population groups which often have unmet vision care needs include Native Americans, the aged and others with low vision, and children with learning disabilities. Off-campus clinical training sites can provide needed vision care services to the community and provide consultative services and continuing education opportunities to area practitioners. The plan's provision of clinical sites and their objectives are similar to those of the existing WAMI (Washington, Alaska, Montana, and Idaho) Medical Education Program, in which Alaska has participated for ten years.

The manpower program is a feature of the plan designed to deal with problems of maldistribution. Information about where practitioners are actually needed will be systematically communicated to students who are completing their training. The plan calls for special recruitment and admission activities, undertaken through the State Coordinating Committee, to interest students who might practice in underserved areas in pursuing an optometric education, as well as seeking greater participation by women and minorities.

Cost of the Regional Plan

Efforts are underway to obtain federal or other funding to implement the regional optometric education plan. After the initial period of implementation, the WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan, which are projected to amount to perhaps $200 to $400 per student per year.

WICHE
Improving Education In The West

THE REGIONAL PLAN AS IT APPLIES TO ARIZONA

The Role of Optometry

Optometrists are experts in measuring human vision; they are educated, trained and licensed to examine the eye and diagnose vision malfunctions or abnormalities. The optometrist prescribes and adapts lenses and other optical aids, and may utilize vision training to improve vision efficiency. Although optometrists represent only a small proportion of all health practitioners, they play a very significant role in providing primary vision care services.

Why a Regional Plan?

A regional approach is the most cost-effective way to meet the education and manpower needs of the western states, and prevent unnecessary duplication of educational facilities and programs. The advantages of a regional approach as a solution to meeting primary vision care needs, are discussed in the proposed WICHE Regional Plan for Optometric Education in the West (for further details see enclosed document dated February 5). Components of the proposed plan address major areas of regional concern and enactment of the plan can be responsive to the diverse needs of a particular state and the region itself.

The Existing Professional Student Exchange Program

The proposed regional plan is designed to deal with each state's need for optometric education and manpower. Access to optometric education for Arizona residents is currently provided through the WICHE Professional Student Exchange Program (PSEP); only an occasional Arizona resident enrolls in optometric education outside the region or without the assistance of PSEP.

Under the PSEP, Arizona residents apply to the Arizona WICHE Certifying Officer for certification of their eligibility for the program; the candidate also applies for admission to one or more of the three western optometry schools. Students enrolled under the program pay resident tuition in the public school (the University of California, Berkeley, School of Optometry) or one-third of the regular tuition in the private schools (Pacific University College of Optometry or Southern California College of Optometry). Arizona pays, through WICHE, a cost-of-education fee to the school which is set by the WICHE Commission. In 1979-80 the cost of education in optometry is $4,500 per student per year.

Benefits of the Regional Plan to Arizona

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be supported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP.

The 1978 ratio of optometrists per population was 8.4; although the ratio increased since 1973 when it was 7.2, the state remains below the current regional average of 11.4. Arizona has one of the highest ratios of ophthalmologists per 100,000 population (5.4). However, the combined ratio (O.D. + M.D.) of vision care providers is 13.8, below the regional average of 16.4.

The vision care needs are expected to increase more drastically for Arizona than for any other WICHE state. On the basis of projected population growth, the state will need 50 percent more vision services in the year 2000. Because Arizona is a sun-belt state, the age distribution of its population is expected to shift significantly. A more aged population will need 10.5 percent more services by 2000. On the basis of these needs, it is estimated that Arizona will require an optometrist population ratio of 14.1 (in 2000); this ratio would be considerably higher than the current state ratio of 8.4 or the regional average (11.4).

If the state continues to support students under the WICHE program as they have (about thirty-five students per five years), and all of these students return, and if there is no in-migration of optometrists, the ratio of optometrists would drop to 6.6 by the year 2000. Under these assumptions, Arizona would need to support about eighty-four students over five years if the state wished to attain the current regional optometrist ratio.

An assumption of no migration is not realistic, however. Over the past five years about sixty optometrists have migrated to Arizona. While many of these migrants may be near retirement, many are also new graduates. If the enrollment and migration trends continue as they have, the ratio of optometrists is projected to increase to 11.2 by the year 2000. While this is a substantial improvement over 8.4 it is below the regional average and well below the ratio required to meet projected state needs.

In terms of other state characteristics, the minority population is large--predominantly the Native Americans who have relatively great unmet needs. The vision care providers are largely concentrated in the urban areas of the state. As of 1977, there were eighty-six opthalmologists in Maricopa County (Phoenix) and twenty-nine in Pima County (Tucson), and only fourteen in the rest of the entire state.

The regional plan calls for the operation of at least one school-sponsored clinical training site in each participating state. It has been shown with other health professions that students are more likely to return to their home area to practice if they take part of their clinical training in their home state. Off-campus clinical training sites can provide needed vision care services to the community and provide consultative services and continuing education opportunities to area practitioners. The plan's provision of clinical sites and their objectives are similar to those of the existing WAMI, the decentralized medical education program based at the University of Washington, that serves Washington, Alaska, Montana and Idaho.

The Southern California College of Optometry now sends students to several sites in Arizona, all through the Indian Public Health Service. The Native Americans group is one that is often underserved. However, there are other population groups which often have unmet vision needs--particularly the aged and others with low vision, and children with learning disabilities. Although Arizona's population is an aging one, the Directory of Low Vision Services (published by the American Foundation for the Blind) lists only one low vision clinic in the state; that clinic is located in Tucson and is open only one day per week.

The manpower program is a feature of the plan designed to deal with problems of maldistribution. Information about where practitioners are actually needed will be systematically communicated to students who are completing their training. The plan calls for special recruitment and admission activities, undertaken through the State Coordinating Committee, to interest students who might practice in underserved areas in pursuing an optometric education, as well as seeking greater participation by women and minorities.

Cost of the Regional Plan

Efforts are underway to obtain federal or other funding to implement the regional optometric education plan. After the initial period of implementation, the WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan, which are projected to amount to perhaps $200 tc $400 per student per year.

WICHE
Improving Education In The West

THE REGIONAL PLAN AS IT APPLIES TO CALIFORNIA

The Role of Optometry

Optometrists are experts in measuring human vision; they are educated, trained and licensed to examine the eye and diagnose vision malfunctions or abnormalities. The optometrist prescribes and adapts lenses and other optical adis, and may utilize vision training to improve vision efficiency. Although optometrists represent only a small proportion of all health practitioners, they play a very significant role in providing primary vision care services.

Why a Regional Plan?

A regional approach is the most cost-effective way to meet the education and manpower needs of the western states, and prevent unnecessary duplication of educational facilities and programs. The advantages of a regional approach as a solution to meeting primary vision care needs, are discussed in the proposed WICHE Regional Plan for Optometric Education in the West (for further details see enclosed document dated February 5). Components of the proposed plan address major areas of regional concern and enactment of the plan can be responsive to the diverse needs of a particular state and the region itself.

California Students in Optometry

The proposed regional plan is designed to deal with each state's need for optometric education and manpower. California is currently the only state not supporting its optometry students through the WICHE Professional Student Exchange Program. California does not support its residents attending private institutions. Some states do provide support for their students attending private institutions within their own geographical boundaries; for example, Oregon sends students under the PSEP to Pacific University College of Optometry. However, as table 4.3 shows, while 53 percent of California optometry students attend the University of California, Berkeley, School of Optometry, a significantly large percentage, 47 percent, are distributed between the West's two private schools and other schools outside of the region.

Southern California College of Optometry (SCCO) has decreased its enrollment of California students, from 75 percent in 1970-71[1] to 24 percent in 1977-

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[1] Wong, John C. Health Manpower Study of Selected Health Professions in California. A report prepared for the California Postsecondary Education Commission, 1976, p. 45.

78.[2] This may have an adverse effect upon the state's optometric manpower situation as many students attending that institution do return to their home states to practice. Between 1960-74, 79.4 percent of the SCCO graduates resided in California;[3] thus the future supply of optometrists in the state depends on SCCO maintaining a high percentage of California students. Thus, California may wish to consider some new approaches in order to maximize opportunities for its optometry students and to ensure an adequate supply of optometric manpower in the future.

Another consideration is the underrepresentation of minorities in optometric education in California, as shown in table 4.7. In view of the large number of minorities in California, the state may wish to consider a program to recruit more minority students into the field of optometry.

Benefits of the Proposed Regional Plan to California

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be suported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP.

California is particularly important to the region because of the size of its population, which is greater than the combined total of all the other twelve western states.

The picture of vision care services in California is positive. The ratio of optometrists increased to 12.5 from the 1973 ratio of 11.7. In addition to most Californian students remaining to practice in the state, about 170 optometrists have migrated to California in a five-year period (1973-1978). This favorable manpower situation is a result of having two of the region's three schools of optometry in the state. California also has a high ratio of ophthalmologists (6.1) and a high combined (ophthalmologist + optometrist) ratio of 18.6 (compared to a regional average of 16.4).

In terms of the vision care needs of the population, absolute growth is projected to increase need by about 23 percent, and an age distribution shift independent of one another will generate a 7 percent increase in needs. The WICHE vision manpower study has estimated that California could need about fourteen optometrists per 100,000 population in the year 2000.

The optometrists in the state also appear to be well distributed. Only two of the fifty-eight counties appear to have no optometrists. It may be that the greatest shortage areas for the state exist in central city locations. This situation may be related to the concentration of minority populations in the urban areas and the real shortage of minority providers (see table 4.7).

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[2] Western Interstate Commission for Higher Education. Vision Manpower Needs in the Western States, 1979, p. 53.

[3] Wong, John C. Health Manpower Study of Selected Health Professions in California. A report prepared for the California Postsecondary Education Commission, 1976, p. 45.

If the state continued to send as many students to optometry school and they all remained in the state to practice, and if no optometrists migrated to the state, the optometrist ratio would drop to 11.6 by 2000. However, this is a very unlikely scenario for California. Many students from outside the state will continue to come to school in California, and some of these students will stay to practice; for instance, it has been reported that 80 percent of the out-of-state students who attend the University of California at Berkeley stay in California.[4] Assuming that migration to the state continues, along with current enrollment and student return rates, the ratio of optometrists will increase to 13.4 by 2000. Thus, it appears that California will continue to be in a relatively positive position, if current trends persist. Any change in state policy probably will need to relate to the need to recruit and retain qualified minority students.

The regional plan calls for the operation of at least one school-sponsored clinical training site in each participating state. It has been shown with other health professions that students are more likely to return to their home area to practice if they take part of their clinical training in their home state. Off-campus clinical training sites can provide needed vision care services to the community and provide consultative services and continuing education opportunities to area practitioners. The plan's provision of clinical sites and their objectives are similar to those of the existing WAMI, the decentralized medical education program based at the University of Washington, that serves Washington, Alaska, Montana and Idaho.

The Southern California College of Optometry now sends students to several sites in California, only one of which serves a predominantly Hispanic Community. Other population groups which often have unmet vision needs include the aged and others with low vision, and children with learning disabilities.

The manpower program is a feature of the plan designed to deal with problems of maldistribution. Information about where practitioners are actually needed will be systematically communicated to students who are completing their training. Optometrists practicing in the state could help encourage students to return to California and to get started in practice. The plan calls for special recruitment and admission activities, undertaken through the State Coordinating Committee, to interest students who might practice in underserved areas in pursuing an optometric education, as well as seeking greater participation by women and minorities.

Cost of the Regional Plan

Efforts are underway to obtain federal or other funding to implement the regional optometric education plan. After the initial period of implementation, the WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan, which are projected to amount to perhaps $200 to $400 per student per year.

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[4] Ibid., p. 501.

Table 4.3*

FIRST-YEAR WICHE STATES OPTOMETRY STUDENT ENROLLMENTS, 1977-78

State	Pacific U. College of Optometry	Southern California College of Optometry	U. of California Berkeley School of Optometry	Out-of-Region Schools	Total All U.S. Schools
ALASKA	1	0	0	1	2
ARIZONA	3	7	0	0	10
CALIFORNIA	14	26	57	11	108
COLORADO	8	4	0	2	14
HAWAII	3	1	1	1	6
IDAHO	3	2	0	0	5
MONTANA	8	6	0	0	14
NEVADA	3	4	0	0	7
NEW MEXICO	2	2	0	3	7
OREGON	10	2	0	0	12
UTAH	3	3	0	0	6
WASHINGTON	8	4	0	0	12
WYOMING	1	2	0	0	3
	67	63	58	18	206
% of Schools 1st-Year Enrollment Taken by Students from WICHE Region	74.7%	65.6%	89.2%	2.0%	18.0%

SOURCE: American Optometric Association, *Annual Report to House of Delegates*, 1978.

*Western Interstate Commission for Higher Education, *Vision Manpower in the Western States*, 1979.

Table 4.7*

COMPARISON OF MINORITY ENROLLMENT IN CALIFORNIA OPTOMETRY SCHOOLS WITH PERCENTAGE OF MINORITIES IN STATE OF CALIFORNIA POPULATION

	Percent of Total Enrollment			
Race/ Ethnicity	So. California College of Optometry (398)	U. of California Berkeley (258)	Two Schools Combined (656)	Percent Minority in State Population
Black	.50%	3.48%	1.67%	7.74%
Hispanic	2.51%	5.81%	3.81%	15.84%
Native American	.50%	0.00%	.77%	.51%
Asian American	9.04%	21.70%	14.02%	3.73%

SOURCES: School Enrollments--American Optometric Association Report to the House of Delegates, June 20, 1978.

Population--State of California, Department of Finance, Population Research Unit. Estimates for 1976.

*Western Interstate Commission for Higher Education. Vision Manpower in the Western States, 1979.

C-26

WICHE
Improving Education In The West

THE REGIONAL PLAN AS IT APPLIES TO COLORADO

The Role of Optometry

Optometrists are experts in measuring human vision; they are educated, trained and licensed to examine the eye and diagnose vision malfunctions or abnormalities. The optometrist prescribes and adapts lenses and other optical aids, and may utilize vision training to improve vision efficiency. Although optometrists represent only a small proportion of all health practitioners, they play a very significant role in providing primary vision care services.

Why a Regional Plan?

A regional approach is the most cost-effective way to meet the education and manpower needs of the western states, and prevent unnecessary duplication of educational facilities and programs. The advantages of a regional approach as a solution to meeting primary vision care needs, are discussed in the proposed WICHE Regional Plan for Optometric Education in the West (for further details see enclosed document dated February 5). Components of the proposed plan address major areas of regional concern and enactment of the plan can be responsive to the diverse needs of a particular state and the region itself.

The Existing Professional Student Exchange Program

The proposed regional plan is designed to deal with each state's need for optometric education and manpower. Access to optometric education for Colorado residents is currently provided through the WICHE Professional Student Exchange Program (PSEP); only an occasional Colorado resident enrolls in optometric education outside the region.

Under the PSEP, Colorado residents apply to the Colorado WICHE Certifying Officer for certification of their eligibility for the program; the candidate also applies for admission to one or more of the three western optometry schools. Students enrolled under the program pay resident tuition in the public school (the University of California, Berkeley, School of Optometry) or one-third of the regular tuition in the private schools (Pacific University College of Optometry or Southern California College of Optometry). Colorado pays, through WICHE, a cost-of-education fee to the school which is set by the WICHE Commission. In 1979-80 the fee in optometry is $4,500 per student per year.

Benefits of the Proposed Regional Plan to Colorado

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be suported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP.

The 1978 ratio of optometrists per population for Colorado was 9.3 per 100,000. This ratio is well below the regional average of 11.4, but above the state's 1973 ratio of 8.4. There are 5.5 ophthalmologists per 100,000 population, and the combined ratio of optometrists and ophthalmologists is 14.8 (below the regional 16.4 average).

By the year 2000, the vision care needs of the state are expected to leap by nearly 40 percent because of population size, and by about 7 percent because of the aging of the population. Based on these projections of need, Colorado may require a ratio of 13.8 optometrists to meet the service requirements of the population.

In terms of geographical distribution, twenty-two of the state's sixty-three counties had no optometrists in 1977; the largest of these counties had a population of about 10,600 persons at that time. Not only do these counties lack the services of an optometrist, they also do not have an ophthalmologist. In fact, all western counties which lack optometric care also lack opthalmologic care. It has been suggested that growth in the number of optometrists has been affected by a combination of factors including a strong Department of Ophthalmology and residency training program at the University of Colorado, Denver, Medical School and the fact that Colorado has only recently begun supporting optometry students through the WICHE Professional Student Exchange Program (ten per entering class). Compared to other states, educational opportunities for students in optometry are low in this state. Under an assumption of no migration, Colorado would need to support about sixty students per five year period to simply maintain the status quo; to attain the current WICHE ratio of 11.4 the state would need to send about eighty students to optometry school per five year period. Colorado will undoubtedly continue to experience significant migration, particularly as a result of energy development. Therefore, the second series of projections is most realistic. Assuming that migration, enrollment and student return trends continue as they have, Colorado's ratio of optometrists will drop to 9.05 by the year 2000. Under these conditions, if the state wishes to maintain its current ratio, forty-four students would need to be enrolled per five-year period, compared to the current number supported through the PSEP of fifty per five-year period. However, if the state wished to attain the current regional average of 11.4 by 2000, the state would need to send seventy-eight students to optometry school per five year period.

On the basis of projected needs of the population and the expected supply of manpower, as well as on the basis of low educational opportunity, it appears that Colorado could consider significantly increasing its support of optometry students.

The regional plan calls for the operation of at least one school-sponsored clinical training site in each participating state. It has been shown with

C-27a

WICHE

Improving Education In The West

THE REGIONAL PLAN AS IT APPLIES TO HAWAII

The Role of Optometry

Optometrists are experts in measuring human vision; they are educated, trained and licensed to examine the eye and diagnose vision malfunctions or abnormalities. The optometrist prescribes and adapts lenses and other optical aids, and may utilize vision training to improve vision efficiency. Although optometrists represent only a small proportion of all health practitioners, they play a very significant role in providing primary vision care services.

Why a Regional Plan?

A regional approach is the most cost-effective way to meet the education and manpower needs of the western states, and prevent unnecessary duplication of educational facilities and programs. The advantages of a regional approach as a solution to meeting primary vision care needs, are discussed in the proposed WICHE Regional Plan for Optometric Education in the West (for further details see enclosed document dated February 5). Components of the proposed plan address major areas of regional concern and enactment of the plan can be responsive to the diverse needs of a particular state and the region itself.

The Existing Professional Student Exchange Program

The proposed regional plan is designed to deal with each state's need for optometric education and manpower. Access to optometric education for Hawaii residents is currently provided through the WICHE Professional Student Exchange Program (PSEP); only an occasional Hawaii resident enrolls in optometric education outside the region.

Under the PSEP, Hawaii residents apply to the Hawaii WICHE Certifying Officer for certification of their eligibility for the program; the candidate also applies for admission to one or more of the three western optometry schools. Students enrolled under the program pay resident tuition in the public school (the University of California, Berkeley, School of Optometry) or one-third of the regular tuition in the private schools (Pacific University College of Optometry or Southern California College of Optometry). Hawaii pays, through WICHE, a cost-of-education fee to the school which is set by the WICHE Commission. In 1979-80 the fee in optometry is $4,500 per student per year.

Benefits of the Proposed Regional Plan to Hawaii

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be supported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP.

In 1978 the supply of optometrists was 9.4 per 100,000 representing a slight increase from 1973 (8.8); however, this ratio is below the regional average of 11.4. The ratio of ophthalmologists is 5.3, and the combined (O.D. + M.D.) ratio is 14.7 per 100,000 (compared to the regional average of 16.4). While these data do not immediately appear favorable, the projected vision care manpower situation for Hawaii actually is very positive.

Students from Hawaii enjoy a very high level of educational opportunity (see Table 4.9). In addition, of the forty students who attended optometry school in the last five years, all of them returned. A few optometrists migrated to the state.

In terms of increase in the service requirements of the population, a growth in size will generate a 23 percent growth in the needs for vision care by 2000. The aging of the population will lead to about an 8 percent increase in needs. On these bases, it is estimated that Hawaii will need a ratio of 13.6 optometrists per 100,000 to deliver care to its population.

Optometrists in Hawaii also appear to be well distributed; because of the small area in the state, care is generally accessible. Under either set of projections--assuming no migration or that current trends continue--Hawaii will probably have a high manpower supply. Some reservations with regard to the projections are appropriate since a slight error in small numbers (of population and optometrists) can result in a relatively large error. If Hawaii wished to reach the WICHE average ratio of 11.4 by 2000, the state would need to enroll twenty-three students every five years--assuming they all would return, and no migration occurred.

Assuming migration continued, the state would need to send only nineteen students every five year period. Although it seems that the state could use a ratio of fourteen optometrists per 100,000, the state is projected to have a ratio of eighteen by 2000. A situation of oversupply may result by the year 2000 if current enrollment and return rate trends persist.

The regional plan calls for the operation of at least one school-sponsored clinical training site in each participating state. It has been shown with other health professions that students are more likely to return to their home area to practice if they take part of their clinical training in their home state. Off-campus clinical training sites can provide needed vision care services to the community and provide consultative services and continuing education opportunities to area practitioners. The plan's provision of clinical sites and their objectives are similar to those of the existing WAMI, the decentralized medical education program based at the University of Washington, that serves Washington, Alaska, Montana and Idaho.

Both the SCCO and Pacific University now send students to the Tripler Army Medical Center located in Honolulu which serves a military community. Other population groups which often have unmet vision needs consist of the aged and others with low vision, children with learning disabilities and minorities. Although the aging of Hawaii's population will account for 8 percent of an increase in need, the Directory of Low Vision Services (published by the American Foundation for the Blind) lists only one low vision clinic in the state; that clinic is located in Honolulu and is only open one day per week.

The manpower program is a feature of the plan designed to deal with problems of maldistribution. Information about where practitioners are actually needed will be systematically communicated to students who are completing their training. Optometrists practicing in the state could help encourage students to return to Hawaii and to get started in practice. The plan calls for special recruitment and admission activities, undertaken through the State Coordinating Committee, to interest students who might practice in underserved areas in pursuing an optometric education, as well as seeking greater participation by women and minorities.

Cost of the Regional Plan

Efforts are underway to obtain federal or other funding to implement the regional optometric education plan. After the initial period of implementation, the WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan, which are projected to amount to perhaps $200 to $400 per student per year.

WICHE
Improving Education In The West

PROJECT: THE REGIONAL PLAN AS IT APPLIES TO IDAHO

The Existing Professional Student Exchange Program

The proposed regional optometric education plan is designed to deal with each state's need for optometric education and manpower. Access to optometric education for Idaho residents is currently provided through the WICHE Professional Student Exchange Program (PSEP); only an occasional Idaho resident enrolls in optometric education outside the region or without the assistance of PSEP.

Under the PSEP, Idaho residents apply to the Idaho Certifying Officer for certification of their eligibility for the program; the candidate also applies for admission to one or more of the three western optometry schools. Students enrolled under the program pay resident tuition in the public school (the University of California, Berkeley, School of Optometry) or one-third of the regular tuition in the private schools (Pacific University or Southern California College of Optometry). Idaho pays, through WICHE, a cost of education fee to the school which is set by the WICHE Commission. In 1979-80 the cost of education in optometry is $4,500 per student per year.

Benefits of the Regional Plan

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be supported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP. Idaho currently provides support for four PSEP students in each year's entering class. Provision of access at the regional average rate (and the national average rate) would call for support of five per class.

In the matter of adequacy of manpower, judgements about what is an adequate supply of optometrists vary from 10.0 to 15.0 per 100,000 population. Idaho's current ratio is 12.2 per 100,000, compared to a regional average of 11.4. Among Idaho's 44 counties, the ratio varies from 38.5 in Teton County to 0.0 in eleven counties-which have no optometrists or ophthalmologists. Thus distribution of optometrists within the state is a concern; it is difficult to make care accessible in remote rural areas.

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The current statewide ratio of optometrists to population is projected to be maintained or increased assuming that: (1) students from Idaho return to practice at the current rate (.85), (2) migration of optometrists to Idaho continues at the current rate, and (3) that Idaho continues to support the current number of students.

To help correct maldistribution, the plan calls for establishing a school-sponsored clinical training site in each participating state. No such site now exists in Idaho. By having part of their optometric training in their home states, students are encouraged to return to their home states to practice. Sites in rural areas encourage students to practice in such areas, which are often lacking in vision care manpower. Other population groups which often have unmet vision care needs include the aged and others with low vision and children with learning disabilities. Off-campus clinical training sites also provide needed vision care services to the community and provide consultative services and continuing education opportunities to area practitioners. The plan's provision of clinical sites and their objectives are similar to those of the existing WAMI (Washington, Alaska, Montana, and Idaho) Medical Education Program, in which Idaho has participated for ten years.

The manpower program is a feature of the plan designed to deal with problems of maldistribution. Information about where practitioners are actually needed will be systematically communicated to students who are completing their training. The plan calls for special recruitment and admission activities, undertaken through the State Coordinating Committee, to interest students who might practice in underserved areas in pursuing an optometric education, as well as seeking greater participation by women and minorities.

Cost of the Regional Plan

Efforts are underway to obtain federal or other funding to implement the regional optometric education plan. After the initial period of implementation, the WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan, which are projected to amount to perhaps $100 to $200 per student per year.

WICHE
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THE REGIONAL PLAN AS IT APPLIES TO MONTANA

The Role of Optometry

Optometrists are experts in measuring human vision; they are educated, trained and licensed to examine the eye and diagnose vision malfunctions or abnormalities. The optometrist prescribes and adapts lenses and other optical aids, and may utilize vision training to improve vision efficiency. Although optometrists represent only a small proportion of all health practitioners, they play a very significant role in providing primary vision care services.

Why a Regional Plan?

A regional approach is the most cost-effective way to meet the education and manpower needs of the western states, and prevent unnecessary duplication of educational facilities and programs. The advantages of a regional approach as a solution to meeting primary vision care needs, are discussed in the proposed WICHE Regional Plan for Optometric Education in the West (for further details see enclosed document dated February 5). Components of the proposed plan address major areas of regional concern and enactment of the plan can be responsive to the diverse needs of a particular state and the region itself.

The Existing Professional Student Exchange Program

The proposed regional plan is designed to deal with each state's need for optometric education and manpower. Access to optometric education for Montana residents is currently provided through the WICHE Professional Student Exchange Program (PSEP); only an occasional Montana resident enrolls in optometric education outside the region.

Under the PSEP, Montana residents apply to the Montana Certifying Officer for certification of their eligibility for the program; the candidate also applies for admission to one or more of the three western optometry schools. Students enrolled under the program pay resident tuition in the public school (the University of California, Berkeley, School of Optometry) or one-third of the regular tuition in the private schools (Pacific University College of Optometry or Southern California College of Optometry). Montana pays, through WICHE, a cost-of-education fee to the school which is set by the WICHE Commission. In 1979-80 the fee in optometry is $4,500 per student per year.

Benefits of the Proposed Regional Plan to Montana

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be supported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP.

Montana has the highest ratio of optometrists to population in the West (15.1 per 100,000); this ratio is well above the regional average of 11.4. The state has a low ratio of AMA listed ophthalmologists (5.0). However, the combined ratio of optometrists and ophthalmologists is 20.1 a figure well above the regional average ratio of vision care providers (17.1). Most of Montana's vision needs are met by optometrists, and an above average supply of optometrists is probably needed.

An increase in population size for the state is projected to increase the need for vision care by 24 percent by 2000. The population is expected to remain rather young; thus an age shift will not cause a significant increase in the need for vision services. In terms of distribution, about sixteen of the state's fifty-seven counties did not have an optometrist in 1977; the largest of these counties had a population of 10,700. Many of the practitioners in the state serve a very large area; however, people in this state are quite accustomed to driving great distances to obtain goods and services.

The state has supported large numbers of optometry students (about thirty-eight in five years) under the WICHE Professional Student Exchange Program. Educational opportunity is very high for Montana students. Because of high supply of optometrists in the state and the lack of practice opportunities, only about twenty-two of those students returned to practice in Montana. If the state continues to provide a high level of educational opportunity, potential students should be made aware of the limited instate practice opportunities.

Based on the assumptions that all students from Montana return to practice, and that there is no in-migration of optometrists into the state, Montana should support about twenty-three students per five year period to maintain its current ratio in the year 2000. If recent trends remain constant, an oversupply of optometrists for the state will probably correct itself--i.e., more new optometrists will choose to practice outside Montana.

The regional plan calls for the operation of at least one school-sponsored clinical training site in each participating state. It has been shown with other health professions that students are more likely to return to their home area to practice if they take part of their clinical training in their home state. Off-campus clinical training sites can provide needed vision care services to the community and provide consultative services and continuing education opportunities to area practitioners. The plan's provision of clinical sies and their objectives are similar to those of the existing WAMI, the decentralized medical education program based at the University of Washington, that serves Washington, Alaska, Montana and Idaho, in which Montana has participated for ten years.

The Pacific University College of Optometry now sends some students to a clinical site in Poplar, Montana operated by the Indian Health Service. The Native American group is one that is often underserved. However, there are other population groups which often have unmet vision needs--particularly the aged and others with low vision, and children with learning disabilities.

The manpower program is a feature of the plan designed to deal with problems of maldistribution. Information about where practitioners are actually needed will be systematically communicated to students who are completing their training. The plan calls for special recruitment and admission activities, undertaken through the State Coordinating Committee, to interest students who might practice in underserved areas in pursuing an optometric education, as well as seeking greater participation by women and minorities.

Cost of the Regional Plan

Efforts are underway to obtain federal or other funding to implement the regional optometric education plan. After the initial period of implementation and development of new program components, the WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan, which are projected to amount to perhaps $200 to $400 per student per year.

WICHE
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THE REGIONAL PLAN AS IT APPLIES TO NEVADA

The Role of Optometry

Optometrists are experts in measuring human vision; they are educated, trained and licensed to examine the eye and diagnose vision malfunctions or abnormalities. The optometrist prescribes and adapts lenses and other optical aids, and may utilize vision training to improve vision efficiency. Although optometrists represent only a small proportion of all health practitioners, they play a very significant role in providing primary vision care services.

Why a Regional Plan?

A regional approach is the most cost-effective way to meet the education and manpower needs of the western states, and prevent unnecessary duplication of educational facilities and programs. The advantages of a regional approach as a solution to meeting primary vision care needs, are discussed in the proposed WICHE Regional Plan for Optometric Education in the West (for further details see enclosed document dated February 5). Components of the proposed plan address major areas of regional concern and enactment of the plan can be responsive to the diverse needs of a particular state and the region itself.

The Existing Professional Student Exchange Program

The proposed regional plan is designed to deal with each state's need for optometric education and manpower. Access to optometric education for Nevada residents is currently provided through the WICHE Professional Student Exchange Program (PSEP); only an occasional Nevada resident enrolls in optometric education outside the region or without the assistance of PSEP.

Under the PSEP, Nevada residents apply to the Nevada WICHE Certifying Officer for certification of their eligibility for the program; the candidate also applies for admission to one or more of the three western optometry schools. Students enrolled under the program pay resident tuition in the public school (the University of California, Berkeley, School of Optometry) or one-third of the regular tuition in the private schools (Pacific University College of Optometry or Southern California College of Optometry). Nevada pays, through WICHE, a cost-of-education fee to the school which is set by the WICHE Commission. In 1979-80 the fee in optometry is $4,500 per student per year.

Benefits of the Proposed Regional Plan to Nevada

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be supported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP.

Between 1973 and 1978 the ratio of optometrists per 100,000 population dropped slightly to 8.3 from 8.7. The ratio of ophthalmologists in the state is fairly high (4.7). The combined ratio of optometrists and ophthalmologists is 13.0, well below the regional average of 16.4. The projected supply for the state suggests that the situation will improve significantly by the year 2000.

Relatively speaking, Nevada was the most rapidly growing state from 1970 to 1977. Population projections suggest that further growth will generate nearly 40 percent more need for vision care services by 2000. The aging of the population will result in about a 9 percent increase in needs. Optometrists also have migrated to the state along with others (about seventeen over five years). Although eight of the state's seventeen counties have no optometrists, there are many very sparsely populated spaces in the state which could not support an optometrist.

Under the WICHE PSEP program, Nevada is currently supporting about twenty-two students per five years. If no migration occurred and all students returned to the state to practice, the state would need to support about twenty students (per five years) to reach the current WICHE average ratio (11.4). Assuming that migration continues and that students are enrolled and return as they have over the past five years, the state's ratio is projected to double (16.5) by 2000. In addition, educational opportunity is also quite high for a student in this state.

The regional plan calls for establishing a school-sponsored clinical training site in each participating state. One such site now exists in Nevada (at the Las Vegas Low Vision Center). By having part of their optometric training in their home states, students are encouraged to return there to practice. Population groups which often have unmet vision care needs include the aged and others with low vision, minorities and children with learning disabilities. Off-campus clinical training sites can provide needed vision care services to the community and provide consultative services and continuing education. If the three optometry schools cooperated, a Nevada student from any of these schools could return to his/her home state for a clinical placement --no matter which school had primary responsibility for operating that clinical site. These clinical sites would offer benefits similar to those offered by WAMI (the decentralized medical education program based at the University of Washington, which serves Washington, Alaska, Montana and Idaho).

The manpower program is a feature of the plan designed to deal with problems of maldistribution. Information about where practitioners are actually needed will be systematically communicated to students who are completing their training. The plan calls for special recruitment and admission activities, undertaken through the State Coordinating Committee, to interest students who might practice in underserved areas in pursuing an optometric education, as well as seeking greater participation by women and minorities.

Cost of the Regional Plan

Efforts are underway to obtain federal or other funding to implement the regional optometric education plan. After the initial period of implementation, the WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan, which are projected to amount to perhaps $200 to $400 per student per year.

C-34

WICHE
Improving Education In The West

THE REGIONAL PLAN AS IT APPLIES TO NEW MEXICO

The Role of Optometry

Optometrists are experts in measuring human vision; they are educated, trained and licensed to examine the eye and diagnose vision malfunctions or abnormalities. The optometrist presecribes and adapts lenses and other optical aids, and may utilize vision training to improve vision efficiency. Although optometrists represent only a small proportion of all health practitioners, they play a very significant role in providing primary vision care services.

Why a Regional Plan?

A regional approach is the most cost-effective way to meet the education and manpower needs of the western states, and prevent unnecessary duplication of educational facilities and programs. The advantages of a regional approach as a solution to meeting primary vision care needs, are discussed in the proposed WICHE Regional Plan for Optometric Education in the West (for further details see enclosed document dated February 5). Components of the proposed plan address major areas of regional concern and enactment of the plan can be responsive to the diverse needs of a particular state and the region itself.

The Existing Professional Student Exchange Program

The proposed regional plan is designed to deal with each state's need for optometric education and manpower. Access to optometric education for New Mexico residents is currently provided through the WICHE Professional Student Exchange Program (PSEP), and through a bilateral contract with the University of Houston; only an occasional New Mexico resident enrolls in optometric education outside these mechanisms.

Under the PSEP, New Mexico residents apply to the New Mexico WICHE Certifying Officer for certification of their eligibility for the program; the candidate also applies for admission to one or more of the three western optometry schools. Students enrolled under the program pay resident tuition in the public school (the University of California, Berkeley, School of Optometry) or one-third of the regular tuition in the private schools (Pacific University, College of Optometry or Southern California College of Optometry). New Mexico pays, through WICHE, a cost-of-education fee to the school which is set by the WICHE Commission. In 1979-80 the fee in optometry is $4,500 per student per year.

Benefits of the Proposed Regional Plan to New Mexico

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be supported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP.

In 1978 the state's ratio of optometrists was 7.4, far below the regional average of 11.4 per 100,000. The ratio of board certified ophthalmologists also AMA listed was low (4.3). The combined ratio of vision care manpower was 11.7 in contrast to the region's average of 16.4. This state has a net ratio of out-migration for optometrists, which may be related to the state's low per capita income and a low demand for services.

Future needs for care are expected to grow by about 32 percent by 2000 because of population growth, and by 8 percent due to the aging of the population. A ratio of 13.7 optometrists would be needed to meet these needs. It should be noted that this state has large proportions of Native Americans, Hispanic Americans, and poverty level residents. Thus the unmet need may be great, yet resources may not exist to support the appropriate use of services.

It appears that the manpower supply will significantly increase by the year 2000 if trends continue as they have. If no migration occurs and enrollments continue as they have, and all students return to the state, the ratio could increase to 13.6. If migration trends continue as they have, New Mexico will have about 11.1 optometrists per 100,000 by 2000.

Improvement in this state's vision status will not come only with an increase in vision care manpower. Thus since the manpower supply appears on track, the support of minority student recruitment and the developement of alternative care delivery mechanisms may be appropriate issues for state consideration.

The regional plan calls for the operation of at least one school-sponsored clinical training site in each participating state. It has been shown with other health professions that students are more likely to return to their home area to practice if they take part of their clinical training in their home state. Off-campus clinical training sites can provide needed vision care services to the community and provide consultative services and continuing education opportunities to area practitioners. The plan's provision of clinical sites and their objectives are similar to those of the existing WAMI, the decentralized medical education program based at the University of Washington, that serves Washington, Alaska, Montana and Idaho.

The Southern California College of Optometry now sends students to several sites in New Mexico operated by the Indian Health Service. The Native American group is one that is often underserved. However, there are other population groups which often have unmet vision needs--particularly the aged and others with low vision, and children with learning disabilities. The Directory of Low Vision Services (published by the American Foundation for the Blind) lists only one low vision clinic in the state; that clinic is located in Albuquerque and is open only one-half day per week.

The manpower program is a feature of the plan designed to deal with problems of maldistribution. Information about where practitioners are actually needed will be systematically communicated to students who are completing their training. The plan calls for special recruitment and admission activities, undertaken through the State Coordinating Committee, to interest students who might practice in underserved areas in pursuing an optometric education, as well as seeking greater participation by women and minorities.

Cost of the Regional Plan

Efforts are underway to obtain federal or other funding to implement the regional optometric education plan. After the initial period of implementation, the WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan, which are projected to amount to perhaps $200 to $400 per student per year.

WICHE
Improving Education In The West

THE REGIONAL PLAN AS IT APPLIES TO OREGON

The Role of Optometry

Optometrists are experts in measuring human vision; they are educated, trained, and licensed to examine the eye and diagnose vision malfunctions or abnormalities. The optometrist prescribes and adapts lenses and other optical aids, and many utilize vision training to improve vision efficiency. Although optometrists represent only a small proportion of all health practitioners, they play a very significant role in providing primary vision care services.

Why a Regional Plan?

A regional approach is the most cost-effective way to meet the education and manpower needs of the western states, and prevent unnecessary duplication of educational facilities and programs. The advantages of a regional approach as a solution to meeting primary vision care needs, are discussed in the proposed WICHE Regional Plan for Optometric Education in the West (for further details see enclosed document dated February 5). Components of the proposed plan address major areas of regional concern and enactment of the plan can be responsive to the diverse needs of a particular state and the region itself.

The Existing Professional Student Exchange Program

The proposed regional plan is designed to deal with each state's need for optometric education and manpower. Access to optometric education for Oregon residents is currently provided through the WICHE Professional Student Exchange Program (PSEP); only an occasional Oregon resident enrolls in optometric education outside the region.

Under the PSEP, Oregon residents apply to the Oregon WICHE Certifying Officer for certification of their eligibility for the program; the candidate also applies for admission to one or more of the three western optometry schools. Students enrolled under the program pay resident tuition in the public school (the University of California, Berkeley, School of Optometry) or one-third of the regular tuition in the private schools (Pacific University College of Optometry or Southern California College of Optometry). Oregon pays, through WICHE, a cost-of-education fee to the school which is set by the WICHE Commission. In 1979-80 the fee in optometry is $4,500 per student per year.

Benefits of the Proposed Regional Plan to Oregon

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be supported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP.

Oregon has a ratio of 13.6 optometrists per 100,000 population, well above the regional average of 11.4. This is undoubtedly related to the location of the Pacific University College of Optometry in Forest Grove, near Portland. Optometrists migrate to Oregon at the rate of about ten per year; these are mostly new graduates who decide to stay after completing their education. This state also has the highest ratio of ophthalmologists to population among the WICHE states (6.7 in contrast to the WICHE average of 5.0). Thus, the combined ratio is the highest in the West (20.3 vision care providers per 100,000 population in Oregon compared to 17.1 for the region as a whole). From the standpoint of manpower supply alone, it appears that the state could decrease the number of students supported.

Educational opportunity is the second factor which states consider in deciding how many students to support. Educational opportunity in optometry for students in Oregon is currently about average. On the basis of this factor, the state should support about 12 students a year. Considering both manpower and educational opportunity, WICHE has estimated that the state should support at least 10 students per year.

One of the problems in making precise manpower projections is finding accurate population projections. In-migration into some western states has been quite significant. Mobility of optometrists is important to the supply of optometrists. If all recent trends including migration continue, the state will have a ratio of about 16.3 optometrists per 100,000 population by the year 2000. As previously noted, a large number of optometry students from out-of-state take up practice in the state. However, of seventy students from the state who went to optometry school in the past five years, only about forty-one established practice in the state. If the state continues to support students at the current rate, it may be desirable to inform these students of a potential lack of future in-state practice opportunities.

This state is not expected to experience a significant increase in needs based on age-specific projections. Furthermore, optometrists are well distributed in the state; only three of thirty-six counties have no optometrists and the populations in these counties are very small.

The regional plan calls for the operation of at least one school-sponsored clinical training site in each participating state. It has been shown with other health professions that students are more likely to return to their home area to practice if they take part of their clinical training in their home state. Off-campus clinical training sites can provide needed vision care services to the community and provide consultative services and continuing education opportunities to area practitioners. The plan's provision of clinical sites and their objectives are similar to those of the existing WAMI, the decentralized Medical Education Program based at the University of Washington, that serves Washington, Alaska, Montana and Idaho.

The Pacific University College of Optometry operates a clinic in Portland which serves a low-income community. Other population groups which often have unmet vision care needs include the aged and others with low vision and children with learning disabilities. Pacific University provides low vision services at the campus in Forest Grove.

The manpower program is a feature of the plan designed to deal with problems of maldistribution. Information about where practitioners are actually needed will be systematically communicated to students who are completing their training. The plan calls for special recruitment and admission activities, undertaken through the State Coordinating Committee, to interest students who might practice in underserved areas in pursuing an optometric education, as well as seeking greater participation by women and minorities.

Cost of the Regional Plan

Efforts are underway to obtain federal or other funding to implement the regional optometric education plan. After the initial period of implementation, the WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan, which are projected to amount to perhaps $200 to $400 per student per year.

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THE REGIONAL PLAN AS IT APPLIES TO UTAH

The Role of Optometry

Optometrists are experts in measuring human vision; they are educated, trained and licensed to examine the eye and diagnose vision malfunctions or abnormalities. The optometrist prescribes and adapts lenses and other optical aids, and may utilize vision training to improve vision efficiency. Although optometrists represent only a small proportion of all health practitioners, they play a very significant role in providing primary vision care services.

Why a Regional Plan?

A regional approach is the most cost-effective way to meet the education and manpower needs of the western states, and prevent unnecessary duplication of educational facilities and programs. The advantage of a regional approach as a solution to meeting primary vision care needs, are discussed in the proposed WICHE Regional Plan for Optometric Education in the West (for further details see enclosed document dated February 5). Components of the proposed plan address major areas of regional concern and enactment of the plan can be responsive to the diverse needs of a particular state and the region itself.

The Existing Professional Student Exchange Program

The proposed regional plan is designed to deal with each state's need for optometric education and manpower. Access to optometric education for Utah residents is currently provided through the WICHE Professional Student Exchange Program (PSEP); only an occasional Utah resident enrolls in optometric education outside the region.

Under the PSEP, Utah residents apply to the Utah WICHE Certifying Officer for certification of their eligibility for the program; the candidate also applies for admission to one or more of the three western optometry schools. Students enrolled under the program pay resident tuition in the public school (the University of California, Berkeley, School of Optometry) or one-third of the regular tuition in the private schools (Pacific University College of Optometry or Southern California College of Optometry). Utah pays, through WICHE, a cost-of-education fee to the school which is set by the WICHE Commission. In 1979-80 the fee in optometry is $4,500 per student per year.

Benefits of the Proposed Regional Plan to Utah

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be supported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP.

Utah has the greatest shortage of vision care manpower in the region. In 1978 the ratio of optometrists was 6.7 per 100,000, well below the regional average of 11.4. The combined ophthalmologist plus optometrist ratio was low--11.8 in comparison to an average of 16.4. In terms of distribution, thirteen of Utah's twenty-nine counties have no optometrists; in 1977 the largest of those counties had a population of about 12,100 people. Furthermore, the supply projections do not show that things will greatly improve without significant changes.

Because of a high birth rate, population growth will create a 34 percent increase in need for services by 2000. The age distribution of the population is not expected to shift and thereby increase need. Thus, on the basis of population-based needs, a ratio of 11.9 optometrists per 100,000 should be adequate.

Under both sets of manpower projections used in the WICHE manpower report, the ratio of optometrists will remain under ten by the year 2000. If the enrollment from Utah remained at its current level (thirty-five per five years) and all these students returned and no in-migration occurred, there would be 9.8 optometrists per 100,000 in 2000. In the past five years, only about eighteen of thirty-five students returned to practice. If this low return rate and low rate of in-migration persists, the state would need to support about sixty-two students per five years to reach the regional average of 11.4 by the year 2000.

It appears that Utah does not attract optometrists--only slightly more than half of the students from the state return to practice, and there is little in-migration. This undersupply may reflect a number of factors: a low demand for vision care, a low per capita income, a low status for the profession in the state, a strong Department of Ophthalmology and residency program, a commercial element in the practice of optometry, or other unfavorable practice conditions. It appears that a large number of Utah residents are underserved.

To help correct maldistribution, the plan calls for establishing a school-sponsored clinical training site in each participating state. No such site now exists in Utah. By having part of their optometric training in their home states, students are encouraged to return to their home states to practice. Sites in rural areas encourage students to practice in such areas, which are often lacking in vision care manpower. Other population groups which often have unmet vision care needs include the aged and others with low vision and children with learning disabilities. Off-campus clinical training sites provide needed vision care services to the community and also can provide consultative services and continuing education opportunities to area practitioners. The plan's provision of clinical training sites and their objectives are similar to those of the existing WAMI (Washington, Alaska, Montana and Idaho) Medical Education Program which has been in existence for ten years.

The manpower program is a feature of the plan designed to deal with problems of maldistribution. Information about where practitioners are actually needed will be systematically communicated to students who are completing their training. Optometrists practicing in the state could help encourage students to return to Utah and to get started in practice. The plan calls for special recruitment and admission activities, undertaken through the State Coordinating Committee, to interest students who might practice in underserved areas in pursuing an optometric education, as well as seeking greater participation by women and minorities.

Cost of the Regional Plan

Efforts are underway to obtain federal or other funding to implement the regional optometric education plan. After the initial period of implementation, the WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan, which are projected to amount to perhaps $200 to $400 per student per year.

WICHE
Improving Education In The West

THE REGIONAL PLAN AS IT APPLIES TO WASHINGTON

The Role of Optometry

Optometrists are experts in measuring human vision; they are educated, trained and licensed to examine the eye and diagnose vision malfunctions or abnormalities. The optometrist prescribes and adapts lenses and other optical aids, and may utilize vision training to improve vision efficiency. Although optometrists represent only a small proportion of all health practitioners, they play a very significant role in providing primary vision care services.

Why a Regional Plan?

A regional approach is the most cost-effective way to meet the education and manpower needs of the western states, and prevent unnecessary duplication of educational facilities and programs. The advantage of a regional approach as a solution to meeting primary vision care needs, are discussed in the proposed WICHE Regional Plan for Optometric Education in the West (for further details see enclosed document dated February 5). Components of the proposed plan address major areas of regional concern and enactment of the plan can be responsive to the diverse needs of a particular state and the region itself.

The Existing Professional Student Exchange Program

The proposed regional plan is designed to deal with each state's need for optometric education and manpower. Access to optometric education for Washington residents is currently provided through the WICHE Professional Student Exchange Program (PSEP); only an occasional Washington resident enrolls in optometric education outside the region.

Under the PSEP, Washington residents apply to the Washington WICHE Certifying Officer for certification of their eligibility for the program; the candidate also applies for admission to one or more of the three western optometry schools. Students enrolled under the program pay resident tuition in the public school (the University of California, Berkeley, School of Optometry) or one-third of the regular tuition in the private schools (Pacific University College of Optometry or Southern California College of Optometry). Washington pays, through WICHE, a cost-of-education fee to the school which is set by the WICHE Commission. In 1979-80 the fee in optometry is $4,500 per student per year.

Benefits of the Proposed Regional Plan to Washington

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be supported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP.

In 1978 Washington's ratio of optometrists was 9.1 per 100,000, in comparison to the regional average of 11.4; the ratio for this state showed the most significant drop since 1973 when the ratio was 11.2. The ratio of ophthalmologists was 4.4, and the combined ratio (optometrist + opthalmologist) was 14.3 (the regional average was 16.4). In spite of the relatively low supply of optometrists in the state, all but three of thirty-nine counties seem to have an optometrist.

By 2000, the need for optometric services is projected to increase by 14 percent because of population growth, and by 4 percent because of a slight age shift in the population. On these bases, the state will need a ratio of about 13.8 optometrists per 100,000 at the end of the century.

If Washington wished to attain the current regional ratio of optometrists by 2000, assuming that the rates of migration and student return continued, the state would need to support slightly more students (about 114 per five years). The rate of migration to the state seems very low for a state of this size (only thirteen over five years).

Over the past five years Washington enrolled about ninety-three students in optometry school, and about sixty of these returned to the state to practice. However, this is the only WICHE state which determines those students who will be supported in the Professional Student Exchange Program on the basis of relative financial need. This policy limits somewhat the numbers of students who are accepted from this state because the schools are obligated under the PSEP to give some preference to WICHE certified students and tend to limit their offers to certified students. This state policy may thus tend to restrict educational opportunity in optometry to students with lower incomes.

The regional plan calls for the operation of at least one school-sponsored clinical training site in each participating state. It has been shown with other health professions that students are more likely to return to their home area to practice if they take part of their clinical training in their home state. Off-campus clinical training sites can provide needed vision care services to the community; in addition these sites can provide consultative services and continuing education opportunities to area practitioners. This plan's provision of clinical sites and their objectives are similar to those of the existing WAMI, the decentralized medical education program based at the University of Washington, that serves Washington, Alaska, Montana, and Idaho.

The Pacific University College of Optometry and the Southern Calfiornia College of Optometry both now send students to several sites in Washington; the majority of which are geared towards serving a military clientele. However, there are other population groups which often have unmet needs--particularly the aged and others with low vision, minorities, and children with learning disabilities. Under the proposed plan, Washington students would be required to take a clinical rotation in their home state--no matter which of the three schools of optometry they were attending.

The manpower program is a feature of the plan designed to deal with problems of maldistribution. Information about where practitioners are actually needed will be systematically communicated to students who are completing their training. Optometrists practicing in the state could help encourage students to return to Washington and to get started in practice. The plan calls for special recruitment and admission activities, undertaken through the State Coordinating Committee, to interest students who might practice in underserved areas in pursuing an optometric education, as well as seeking greater participation by women and minorities.

Cost of the Regional Plan

Efforts are underway to obtain federal or other funding to implement the regional optometric education plan. After the initial period of implementation and development of new program components, the WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan, which are projected to amount to perhaps \$200 to \$400 per student per year.

WICHE
Improving Education In The West

THE REGIONAL PLAN AS IT APPLIES TO WYOMING

The Role of Optometry

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Why a Regional Plan?

A regional approach is the most cost-effective way to meet the education and manpower needs of the western states, and prevent unnecessary duplication of educational facilities and programs. The advantages of a regional approach as a solution to meeting primary vision care needs, are discussed in the proposed WICHE Regional Plan for Optometric Education in the West (for further details see enclosed document dated February 5). Components of the proposed plan address major areas of regional concern and enactment of the plan can be responsive to the diverse needs of a particular state and the region itself.

Existing Provisions for Optometric Education

The proposed regional plan is designed to deal with each state's need for optometric education and manpower. Access to optometric education for Wyoming residents is currently provided through bilateral contracts between the state and the two private schools of optometry in the West (Pacific University College of Optometry and Southern California College of Optometry). Only an occasional Wyoming resident enrolls in other schools of optometry.

The regional plan provides that enrollment and support of Wyoming residents in optometric education would be handled through the mechanism of the WICHE Professional Student Exchange Program, which is used by Wyoming in other fields of professional education and was used in the past in optometry. Under the PSEP, Wyoming residents will apply to the Wyoming WICHE Certifying Officer for certification of their eligibility for the program; the candidate will also apply for admission to one or more of the three western optometry schools. Students enrolled under the program pay resident tuition in the public school (the University of California, Berkeley, School of Optometry) or one-third of the regular tuition in the private schools (Pacific University College of Optometry or Southern California College of Optometry). Wyoming will pay, through WICHE, a cost-of-education fee to the school which is set by the WICHE Commission. In 1979-80 the fee in optometry is $4,500 per student per year.

Benefits of the Proposed Regional Plan to Wyoming

The regional plan provides for the three schools to guarantee a minimum number of admissions for qualified applicants from each state. This number of students to be supported will be based on considerations of the state's manpower needs and of access to education; this allocation is clearly limited by the number of students the state is willing or able to support through the PSEP.

Wyoming's supply of optometrists is 12.9 per 100,000 population, a ratio above the regional average of 11.4. The state's ratio of ophthalmologists is low, however, suggesting that optometrists are particularly important in meeting the state's vision care needs. The combined ratio (optometrists + AMA listed ophthalmologists) per 100,000 is 17.3, which is about average for the WICHE region. Although the current supply seems adequate, the state might have a surplus if current trends continue.

According to the census bureau, the state's population growth will be great, and this growth will generate about a 30 percent increase in the need for services by 2000. It should be noted that the state estimates that its population already exceeds the 1980 census bureau projections. Thus some of the population numbers used in our projections may be low and the optometrist to population ratios may be somewhat exaggerated. In fact, some rural and remote areas may need optometrists. Since a large amount of the vision care needs are met by optometrists in the smaller communities, a higher ratio of optometrists may be warranted. On the basis of the aging of the population, an 8 percent increase in optometric needs is projected by the year 2000.

During recent years Wyoming has supported a great number (forty per five years) of students in optometry school through bilateral contracts. Thus educational opportunity is very high. About three-fourths of these students appear to return to practice in the state. In addition, about eighteen optometrists migrated to Wyoming over five years (1973-1978).

Under both sets of assumptions used in the recent study of vision manpower the WICHE projections show that Wyoming may be oversupplied with optometrists by 2000. While the population figures used in these projections may be low, the projected ratios of optometrists are so high (thirty-six per 100,000 under one assumption and forty under the other assumption) that it appears Wyoming's support of students is in excess of the state's manpower needs. In order to provide for educational opportunity, the state would clearly need to continue to support some students.

The high level of student support in Wyoming reflects the state's policy of providing educational opportunities to qualified students in the professions, regardless of in-state manpower needs. Those graduating students who cannot find practice opportunities in Wyoming will no doubt contribute to the growth of the vision care manpower in the rest of the region.

To help correct maldistribution, the plan calls for establishing a school-sponsored clinical training site in each participating state. No such site now exists in Wyoming. By having part of their optometric training in their home states, students are encouraged to return to their home states to practice. Sites in rural areas encourage students to practice in such areas, which are often lacking in vision care manpower. Other population groups which often have unmet vision care needs include the aged and others with low vision and children with learning disabilities. Off-campus clinical training sites provide needed vision care services to the community and also can provide consultative services and continuing education opportunities to area practitioners. The plan's provision of clinical training sites and their objectives are similar to those of the existing WAMI (Washington, Alaska, Montana and Idaho) Medical Education Program which has been in existence for ten years.

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Efforts are underway to obtain federal or other funding to implement the regional optometric education plan. After the initial period of implementation and development of new program components, the WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan, which are projected to amount to perhaps $200 to $400 per student per year.

ADDENDUM C
(Continued)

SUMMARIES OF STATE REVIEWS OF THE REGIONAL PLAN

SUMMARY OF ALASKA STATE REVIEW

Juneau, Alaska

February 4, 1980

Senator Glenn Hackney, Chairman of the Alaska Senate Committee on Health, Education and Social Services and a WICHE Commissioner, as well as a member of the Advisory Committee on the Regional Optometric Education Project, chaired the state review meeting in Juneau. Others attending were: Representative Pat Carney from Wasilla; Ms. Hali Denton, Aide to Representative Pappy Moss from Delta; Ms. Kathy Johnson, Director of the Alaska Native Health Career Program under Rural Education, University of Alaska; Dr. James Matson, optometrist from Juneau; Ms. Jane Maynard, WICHE Coordinator for the Postsecondary Education Commission; Representative Brian Rogers from Fairbanks; Dr. Kerry Romesburg, Executive Director of the Postsecondary Education Commission and WICHE Commissioner; Pat Saiki, Hawaii State Senator and Chairman of the WICHE Commission; Mr. Dave Scott, Fiscal Analyst for the Legislature; Mr. Frank Spargo, Budget Analyst for the Governor's Office; Dr. David Spence, Pediatrician with the Division of Public Health, Department of Health and Social Services; and Senator Arliss Sturgulewski from Anchorage.

Senator Hackney led off the meeting by indicating that on the basis of the extensive WICHE study on optometric needs and the potential for meeting those needs in the West, there seemed to be very good reason for considering Alaska's participation in the regional optometric education plan.

As the WICHE staff representative, Phil Sirotkin explained that the original intent was for Susan Klein, the director of the project, to conduct the Alaska review, but since WICHE Chairman, Hawaii Senator Pat Saiki and he had scheduled visits with Governor Hammond and the Senate and House Health, Education and Social Services Committee while they were in session, it was decided to conserve funds and effort by planning the state meeting at this time. Phil expressed appreciation to the participants for their willingness to meet on such short notice.

Phil outlined three major objectives of the proposed regional plan: (1) to provide optimal educational opportunities for western students in terms of access to an optometric education; (2) to improve meeting the vision care needs of the people in the West; and (3) to maximize efficient use of the existing educational resources in the region.

In regard to (1), he indicated that on the basis of the WICHE study, there were sufficient places in the three existing western schools of optometry to meet the current and projected demand for access and vision care manpower in the region. There is no necessity for establishing any new, costly programs or facilities in this field in the West. However, there is a need to provide firm financial support for the existing programs so that they can continue to ensure access for western students, especially in view of the continued high number of applicants for admission.

In regard to (2), he reported that the distribution of vision care manpower is not only uneven among western states, but the availability of services is very uneven within states. There are both geographical areas and certain population groups within several of the states not receiving basic vision care. To help meet these needs, a distinctive element in the proposed regional program is the establishment of off-campus clinical training sites in each of the states. These programs would be directed and supervised by one of the three educational institutions. Students from the sending states would be required to fulfill at least part of their clinical training at a site in their own state. Thus, it is anticipated that in addition to providing vision care services for certain underserved groups, such as residents of rural areas, the probability of retaining students from the sending states would be enhanced. Each statewide Coordinating Committee would work with the educational institution in determining the location of the clinical site.

A general question and discussion period followed. Questions raised included: would admission to the three existing optometric education programs be restricted to WICHE-supported students; what is the ratio between the current number of Alaska students applying and being admitted both to WICHE schools and institutions outside the region; who pays for the costs of the clinical training site; when and how much would it be per student? It was clear from the ensuing discussion among the representatives present, that the state would be willing to assume the additional costs after the initial thirty months, if the federal government supported the developmental phase. There also was a question about the differences between the existing Professional Student Exchange Program and the proposed regional plan.

There was discussion about the relationships between ophthalmologists and optometrists and the drug use issue, especially in terms of the availability of basic vision care in the extensive rural areas of Alaska. There was strong support for adding another clinical site to the existing one in Anchorage to serve the rural parts of the state, partly as a basis for providing services, but also as a way of attracting more manpower to practice in such settings. The success of the Alaska Health Careers Center was cited as an example of where this process has worked in some of the other health professions. One possibility discussed by the group involved a traveling clinical training arrangement whereby the student would accompany a qualified practitioner in the "bush" country to help with "the vision problems of the Natives which are phenomenal compared with those of the non-Native population." It was explained that such possibilities could be negotiated by the proposed State Coordinating Committee with the faculty from the educational institution.

Several participants discussed the extent to which the proposed plan was an effort to increase both the number of optometrists in Alaska as well to redistribute manpower within the state. Also, there was a clear indication of interest in having more than one clinical training site in the state.

In summary, the meeting was very positive in tone. Indeed, the state's chief budget officer, who had raised several questions during the meeting about funding, came up to Phil Sirotkin afterward and, in the presence of several persons, expressed firm support for the proposed plan. Others indicated that, in terms of timing, it was critical to have the federal funding support initially and demonstrate the operational value of the program in terms of additional services. The issue of greatest concern and interest was the need to place more practitioners and services in rural Alaska. The conclusion seemed to be that this plan was worth undertaking as an experiment and effort to meet that top priority need.

SUMMARY OF ARIZONA STATE REVIEW

Phoenix, Arizona

February 28, 1980

The Arizona State Review of the regional plan for optometric education was held in the offices of the Board of Regents in Phoenix on February 28 from 8:30 to 10:00 a.m. The three WICHE Commissioners were unable to attend because of conflicting demands of schedules which arose at the last minute. Susan Klein was, however, able to meet briefly with Commissioner Jones Osborn in his office later the same morning. The meeting was attended by Dr. Bill Phillips (optometry Advisory Committee member), Odus Elliott (WICHE Certifying Officer), Bob Maynard, O.D. (past president of the Arizona State Optometry Association), and Selma Pine (Executive Director of the Arizona State Optometric Association).

Susan Klein began the meeting by describing how WICHE had become involved in developing a regional plan for optometry, and how the plan fit with WICHE's overall mission (manpower, access and quality of education). She also discussed the cost-effectiveness of regional approaches to health professional education, and noted that the WICHE study has shown that no new school is needed in the region and that the existing educational resources in optometry are adequate.

The primary purpose of this meeting was outlined: to assess Arizona's interest in the plan, to assess what resources might be available if it were implemented, to assess if this regional plan is one that WICHE should pursue.

Susan Klein then briefly described the traditional Professional Student Exchange Program (PSEP) and how it provides access to education for state residents. A question was raised about the five-year residency requirement. Dr. Phillips indicated there was little interest in decreasing this period since the state's intent is to provide access only to state residents. He estimated that as many as one-third of the state's undergraduates come from out-of-state. He also indicated that the state is actively pursuing its pay-back mechanism: year for year service in the state or repaying half the cost of the support fees paid on the individuals' behalf. The state is in the process of suing a dentist for falsifying his practice location. The state has received court approval to follow these cases across state lines.

Susan Klein then described some of the findings of the manpower report, Vision Manpower in the Western States (following tables 1, 2 and 3 in the regional plan, dated February 5). The state's current ratio of 8.4 optometrists per 100,000 population is well below the regional average of 11.4, though up slightly from 7.2 in 1973. The state does have a somewhat high ratio of ophthalmologists, relatively speaking. The state's needs for vision care are expected to increase drastically because of increasing size of the population, and a growing percent of elderly. It was noted that there is only one low vision clinic in the state, in Tucson, that meets one day a week. Apparently, a second clinic has recently been established in Phoenix that also is open one day a week. The elderly and others with low vision appear to be unserved in Arizona.

In terms of educational access (table 2) it appears the state should support some more students. Because of the state's interest in supporting "real" residents, column 3 (based on the number of high school graduates four years earlier) may be a better indicator of educational access.

Statistics regarding optometry and PSEP were discussed by the certifying officer. The limits on the number supported in optometry have changed from year to year; last year six slots were approved, this year eight (on the basis of the WICHE manpower report). This year eleven students have been certified. Last year twelve were certified, but only three were accepted. It was indicated that there was no problem in getting the WICHE budget approved; the state generally thinks it gets a good deal. Apparently it would not be difficult to tack on as much as $1,000 to the PSEP support fee to develop the new program components.

It was noted that the Department of Health Services did not send a representative to the meeting because they have nobody on staff concerned with vision or health manpower. Vision care is not a priority in the state. The aged population in the state is generally well-off financially, and is not an activist group. Furthermore, Arizona is the only state without Medicaid.

Dr. Maynard indicated that cooperation with the schools, especially Southern California College of Optometry (SCCO) had not been a problem in the state. A couple of years ago a plan had been worked out to develop clinical sites in Maricopa County and with the Department of Corrections with the cooperation of SCCO. The problem was to find funding for the sites. It was estimated by the state's optometric association to cost about $100,000 to start a clinical site.

The advantages of the clinical network were discussed by Susan Klein: enticing students to return to the state, cooperative placement by schools, could help meet unmet vision care needs in the community, improving quality of care by facilitating clinical-based continuing education and other consultative services. Role of profession and the state was discussed--i.e., State and Regional Coordinating Committees.

The increased communication and cooperation among the three schools of optometry was discussed as positive outcome of the current planning contract.

The need for an implementation contract and the need for Congressional earmarking was raised. Ms. Pine offered to pursue the matter with several Arizona Congressmen. At the time of the next cost-of-education survey, the costs of the new program components would be costed at approximately $200 to $400 per student a year.

Toward the end of the meeting, Susan Klein asked participants to summarize their opinions about the plan. Dr. Maynard said he is concerned about the low number of students being supported relative to future (population) needs. He spoke highly of the idea of a clinical site within the state, referring particularly to the sites established by SCCO. He referred to the clinic in Nevada (run by SCCO) that is well liked by local practitioners. Here (Arizona) there is no place to give a licensing exam, and there is a need for "hands on" continuing education. Dr. Maynard agreed that students would be more likely to come back to practice. He also mentioned that a great number of optometrists in the state are nearing retirement.

The need for more and better career counseling for optometry was discussed. In addition, Dr. Maynard observed that few practitioners or students know about the WICHE program. He suggested that students be provided information on the PSEP early in their education.

Dr. Phillips said that his office wants to do what is best for the state. He observed that his office does not have a role in career counseling, and that the profession must take a leadership role in recruiting students and promoting interest in optometry.

The concept of a clinical site seems important to the profession. The Board of Regents' office said it would be easy to support an increase in optometry support fees, as opposed to trying to see a whole new program concept.

SUMMARY OF CALIFORNIA STATE REVIEW

Sacramento, California

March 25, 1980

The state's review of the regional optometric plan was held in the offices of the California Postsecondary Education Commission; the meeting was chaired by Pat Callan, Director of CPEC and WICHE Commissioner. Phil Sirotkin and Susan Klein represented WICHE. Participants in the review included: Rosalyn Elms, Consultant to the Assembly Subcommittee on Postsecondary Education; Martha Zaragosa, Consultant to the Assembly Subcommittee on Health Personnel; Hal Geiogue, Principal Program Analyst to the Legislative Budget Committee; Bill Barrett from the Office of Statewide Health Planning and Development; Ernest Takahashi from the State Board of Optometry; Dick Hopping, President of Southern California College of Optometry; Darrell Carter, Assistant Dean of University of California, Berkeley, School of Optometry; and Keith Pailthorp, David Grover, and Suzanne of the CPEC staff.

Pat Callan began the meeting by endorsing the concept of regional cooperation, commenting on the value to the state in having an opportunity to influence the development of the plan and then discuss the recommendations of the plan.

Phil Sirotkin gave a general overview of the regional plan and its objectives. He summarized its benefits for California: (1) access to education, particularly for minorities; (2) a continued supply of manpower; and (3) improvement of the availability of care, especially for minority and inner city groups.

Susan Klein reviewed the manpower and access data upon which the plan's recommendations are based. It was noted that California is the only state that does not support students through WICHE's Professional Student Exchange Program. Even though the state does support optometric education at Berkeley, California is dependent on the two private schools in the region. Last year there were fifty seven California residents who entered UCB, twenty-six who entered SCCO, and fourteen who entered the Pacific University College of Optometry; overall 47% of California optometry students are enrolled at PACU, SCCO and other schools.

The underrepresentation of minority students is especially marked for this state. Participants showed a great deal of interest in this problem; they also recognized that there are no simple solutions. The state's participation in PSEP would improve access for minorities by removing the financial barrier of private school tuition. However, efforts are also needed to increase the pool of qualified applicants.

Other features of the regional plan were presented: the development of a cooperative network of clinical placement sites, the manpower program, and state input into the operation of the private schools.

The need to obtain federal funding to support the development of the proposed regional program components was discussed. If this start-up funding were available, operational costs would later be assumed by the states at a cost of $200 to

$400 per student a year. The cost of California entering into the PSEP would result in a different cost; there is about thirty to thirty-five California residents who do not attend UCB who could be supported by PSEP at a cost of $4,500 per student a year. If outside funding for program development becomes available California would certainly participate. However, the state is unlikely to because of fiscal constraints to support new programs. The idea of the state entering into the PSEP was not dismissed as undesirable.

The general question and discussion period was positive. Questions were broad ranging, including: the numbers of females in the profession; the existence and effects of licensing and reciprocity on the manpower supply; comparability of SCCO and UCB admissions standards; how the regional plan might affect optometrist migration to California; how the outreach clinics might operate.

The reactions of participants was good. The regional concept appears to be seductive for the state. As elsewhere, the biggest obstacle is cost. The model was recognized as a positive one for other professions, and these representatives suggested that Calfiornia would be as supportive as possible in implementing the plan.

SUMMARY OF THE COLORADO STATE REVIEW OF THE REGIONAL OPTOMETRIC EDUCATION PLAN

Denver, Colorado

March 14, 1980

The Colorado State Review was held at the office of the Colorado Commission on Higher Education (CCHE) on March 14, 1980. Dr. Charles Manning, associate executive director of the CCHE, chaired the meeting. In attendance were Dr. Willard Bleything, dean, Pacific University College of Optometry, and WICHE staff Phil Sirotkin, Bill McConnell, and Gloria Jimenez. State participants included Dan Chapman and Stan Elofson of the Colorado Legislative Council; Ron Fair, optometrist and project advisory committee member; Lee Kerschner, executive director, Colorado Commission on Higher Education; Bill O'Rourke, director, Colorado Optometric Association; Jim Perrin, Office of State Planning and Budgeting.

Dr. Manning began the meeting with an explanation of the purpose of the optometry state review. Phil Sirotkin reviewed WICHE's mission and the rationale for a regional approach to problems of manpower and access. He also explained the development of the regional plan, the key elements, and benefits of the clinical training aspect of the plan as well as the issues of funding. He indicated WICHE will seek federal funding for implementation, but such support is not assured.

Bill McConnelll reviewed the manpower and access studies presented in the regional plan with special emphasis on Colorado's optometric situation. He pointed out that Colorado currently is one of the underserved states in the West and that a major question is whether Colorado would increase the number of students it supports in optometry schools. Colorado ranks below the region in manpower supply and is also low in terms of student access. On the basis of these analyses, it was recommended that Colorado increase support for 15.5 Colorado students per entering class to improve the current supply ratio of 9.3 O.D.s per 100,000 population. Bill also defined services currently provided under the existing Student Exchange Program.

Dr. Bleything discussed delivery systems in vision care and the problems of maldistribution of manpower in both rural and urban settings in terms of underserved populations. The clinical training sites would provide benefits to these underserved areas while encouraging students to return to practice there. Dr. Bleything indicated a need for a delivery system that requires that care be provided for areas that cannot support a practitioner.

Questions were raised about placing students for clinical training in rural areas without existing health systems and then attempting to guarantee that these students would return to such areas upon graduation. There was a discussion about possible variations of the team placement approach to encourage the return of students to these areas. Outreach clinics and other services were cited as examples of approaches that have proven successful often in the absence of an existing vision center.

On the issue of minority recruitment, questions were raised about effective approaches to the recruitment of more minorities, and there was agreement on the need to identify clearly a successful method to achieve this goal.

There was an explanation of the incremental cost to the state for participating in this regional program. The estimate of $200-400 per student was not considered by the Colorado representatives to be a major deterrent. However, alternative means of funding were examined to offset some of the costs involved. The possibility of utilizing funds already allocated for minority recruitment in education by shifting them to help defray the costs of recruiting minority optometry students was cited. There were questions about the feasibility of using this resource, and it was agreed that the suggestion would have to be examined carefully. Another possibility mentioned was the allocation of CETA funds for paying the costs of students while they were in the clinical training sites.

Legislation in the State of Colorado to participate in the regional plan would not be necessary. Colorado is a pro-regional state and the feelings are positive (e.g., funding of WESTPO and the CSU vet school). The major attraction would be in a guaranteed return of the students to practice in the underserved areas of the state. There was a consensus about the need to avoid having the regional plan confused in any way with the O.D. versus M.D. controversies of the past.

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SUMMARY OF HAWAII STATE REVIEW

Honolulu, Hawaii

April 28, 1980

The Hawaii state review was held at the State Department of Health in Honolulu on April 28, beginning at 4:30 p.m. Commissioners Saiki and Fairbanks attended the meeting. Abelina Shaw, who replaced Tadao Beppu as Deputy Director represented the Health Department. The state's optometrists were well represented: Robert Chang, Kin M. Ching, Roger Ede, Kenneth Fujimoto, Arthur Kobayashi, Dennis Kuwabara, Wayne Matsuyama, Clarence Murata, Patrick Nam, Guy Nishizawa, Seizen Oshiro, Ronald Reynolds, Edwin Takahashi, Chris Yamamoto (student), and Stanley J. Yamane. Dr. Willard Bleything represented the Pacific College of Optometry, and Susan Klein represented WICHE.

Ms. Shaw called the meeting to order. Senator Saiki greeted the group and offered some general remarks about WICHE. Susan Klein also expressed her appreciation to those attending. She then described how this special project in optometry, funded by a federal contract, fits with the overall mission of WICHE: to ensure the region an adequate supply of manpower, to facilitate access to education, and to improve the quality of education. The regional approach has been shown to be especially valuable for the health professions in preventing the expensive duplication of schools. When this project began, it was believed by many that a new school was needed in the West. It is now clear that no new school is presently needed, and that the resources of the existing 3 schools are adequate.

The primary purposes of this meeting were outlined: to assess Hawaii's interest in the proposed plan, and to assess if this is a concept that WICHE should pursue.

The development of the regional plan has been supported by a federal contract over the past 20 months. The plan has been guided by an Advisory Committee representing the 13 western states. WICHE also worked closely with the 3 regional schools. The plan has now also been reviewed in each of the western states.

Susan Klein then briefly described the existing PSEP, the traditional WICHE program which provides educational access. A student applies for certification to Hawaii's certifying officer, Don Fukuda. At the same time, the student applies to schools of optometry. If certified and accepted, the student pays in-state tuition at a state school or one-third tuition at a private school. The state pays a 4,500 cost of education fee through WICHE. In 1979, Hawaii supported 23 students in optometry: 11 at Southern California College of Optometry, 2 at the University of California, Berkeley, and 10 at the Pacific University College of Optometry.

As background for developing a regional plan, WICHE staff conducted two studies: 1) a manpower report on Vision Care Needs in the West, and 2) a review of existing regional plans for their applicability to the field of optometry. The proposed plan is, in fact, modeled after the "WAMI" program, a decentralized medical education program based at the University of Washington that takes students from Washington, Alaska, Montana, and Idaho.

The manpower report looked at a number of issues. It examined the role of the optometrist, who is important in primary care and prevention. The report looked at factors affecting need and demand - for example, the aging of the population. Data were included on the distribution of optometrists by county throughout the West, as well as on the distribution of ophthalmologists.

Susan Klein then went on to review some of the data (summarized in the bright blue description of the plan) upon which the plan was developed. In 1973, Hawaii had a ratio of 8.8 optometrists per 100,000 population; by 1978 that increased to 9.4 still well below the regional average of 11.4. Adding to the number of optometrists the number of ophthalmologists, there was a total of 14.7 vision care providers. Although the situation currently does not seem very favorable, WICHE projections show that the supply of optometrists will increase considerably - possibly to a level of oversupply by the year 2000. On the basis of manpower needs alone, it is recommended that Hawaii support about 4 students a year.

However, there are two factors that a state should consider in deciding how many students to support in a field: 1) manpower need, and 2) educational access or opportunity. Educational support for Hawaiian students in optometry is quite high; well above the regional average. On the basis of opportunity alone, the state should support about 5 students. Overall, it is recommended that Hawaii support about 6 students a year; the number actually supported will be determined by the state.

Susan Klein then went on to outline the proposed regional plan. There are two major goals of the plan: providing educational opportunity and meeting the region's manpower needs. The question asked most often is "How does the plan differ from the PSEP?" Under the plan: the schools would become more responsive to state needs and would provide more services to sending states; the quality and quantity of services provided in states would be improved; students would receive greater incentives to return to their home state to practice. A major focus of the plan would be to strengthen the link between the states and the schools. A State Coordinating Committee would provide input from state practitioners, State Health Department and others in identifying underserved populations, the need for manpower and potential practice sites.

The five features of the plan were described: 1) Access and Admissions. Although the region as a whole has adequate manpower, there is maldistribution among states. The plan will help encourage states with low enrollments to support more students.

(2) Cooperative Network of Off-Campus Clinical Training Sites - all schools now operate some off-campus clinics to provide students with needed clinical exposure. In Hawaii, both Southern California College of Optometry and Pacific University College of Optometry use the Tripler Army Medical Center. Other clinical sites could provide exposure to different kinds of practice settings and different kinds of patients. Decentralized clinics have a number of values: students can help provide services where unmet needs have been identified, e.g., the aged, those with developmental disabilities; they help entice students to return to their home states; schools would cooperate to place students in home states; the clinical sites would help improve the quality of care in the community by making available clinically-based continuing education and by providing other consultative services, e.g., relating to occupational health or highway safety.

The clinical sites would be an important part of a larger (3) Manpower Program that would help to encourage students to practice where they are needed. The schools would be encouraged to share information about potential practice sites, and students would be provided better data on which to make their decisions.

(4) Sharing of Institutional Resources. Each of the schools in the region has its unique strengths. Under the proposed program the three schools would share more of their resources. Since they would be cooperating in the placement of clinical students, they would develop common evaluation criteria.

(5) Financial Plan. It is important to assure the financial stability of the existing schools. The proposed plan has been developed on the assumption that outside support would make it possible to actually develop the new program including new clinical sites and that the state would then assume operational costs ($200-$400 a student per year). Currently, WICHE is exploring a "Plan B" that would allow for gradual development with little added cost. State input is needed to determine future directions, before a plan is presented to the Commission.

Dean Bleything then commented about the interest of the optometry school in the regional concept. He described his college's long contact with the State of Hawaii. He spoke of the opportunities available in the state for optometry to work with the Health Department, and perhaps with the School of Public Health to study vision care needs. Dr. Bleything discussed the value of clinical sites for both providing services to the community and continuing education to practitioners; he also mentioned the potential for building a residency program.

A general discussion and question period ensued. A series of questions were asked about the selection and operation of clinical sites. A student in the group spoke of the value of the Tripler experience because of the opportunity to work with ophthalmology; the student also spoke very positively of his preceptorship experience in providing exposure to a "real life" private practice. The student suggested that perhaps the schools could contract with private practitioners and avoid the time being devoted to a costly new clinic. The clinical placements were described as benefitting everyone: the community, students, and practicing optometrists.

Opportunities for placement with the Health Department were discussed. There is a low vision clinic to which both optometrists and M.D.'s refer patients; it is now operating only 1 day a week. Since there is currently no optometrist in the Health Department, the screening of children in school is often primitive. Using students to meet these needs would provide services to the state as well as a learning experience to the students.

The idea of "payback" was raised and discussed. General agreement held this as an unfavorable policy.

Several questions were raised about the manpower report. Was the trend in the supply of ophthalmologists used in the WICHE projections? The bimodal distribution of the ages of optometrists was noted. The major difference between the optometry association manpower figures and those of WICHE is that the latter included data on the inmigration of optometrists. It was noted that the WICHE numbers are not magical, and may be on the conservative side.

The process of certification for the WICHE PSEP was also discussed.

A number of questions dealt with the reactions of other states, where things go from here, and what the state association could do. There was interest among several attendees in forming a State Coordinating Committee in the near future.

Pat Saiki reported on numbers of students who were certified and stressed the need for the association to support the issue in the legislature. She said three criteria were used in deciding how many students to support: manpower needs, educational support, and the amount of dollars.

Appreciation was expressed to everyone for attending the meeting.

SUMMARY OF STATE REVIEW

Boise, Idaho

January 21, 1980

WICHE staff had decided that it would be most appropriate if the State Higher Education Executive Officer would chair the state review meeting. Dr. Cliff Trump did preside over the Idaho meeting, and introduced the WICHE staff. Since this was the first review, three of the WICHE staff participated in the meeting: Phil Sirotkin, Bill McConnell and Susan Klein. Larry Clausen, Assistant Dean at Pacific University College of Optometry also attended. State participants included: two WICHE Commissioners, the state's representative on the Regional Optometry Advisory Committee, several legislators and representatives of the optometry profession, an assistant to the Governor, a member of the Division of Budget, Policy, Planning and Coordination, and the director of the Department of Health and Welfare.

The meeting was held at noon (from 12 to 1:30 p.m.) and lunch was served. Although WICHE staff had been concerned that this would curtail the discussion, this amount of time appeared to be sufficient--particularly because of the uncertainty about implementation funding.

As Executive Director, Phil Sirotkin thanked the participants for taking out time from their busy schedules. He explained how the Regional Project in Optometry fits with the missions of WICHE: to help ensure the region an adequate supply of manpower, facilitate access to education, and to improve the quality of education. Phil also defined the primary purpose of the meeting as being to assess this state's interest in the plan--if this was a program concept that WICHE should pursue.

Bill McConnell primarily discussed data on manpower and access pertinent to Idaho (found on pages 4, 5 and 6 of the plan dated January 15). He also described how the Professional Student Exchange Program operates.

Susan Klein discussed how the proposed plan differs from the existing PSEP: the schools will become involved in providing more services to the sending state (in addition to simple access), that the program could improve the quality of vision services in the state and perhaps meet some unmet need for care, as well as to ensure a continued supply of manpower. Idaho has a generally favorable supply of optometrists at this time. However, it should be noted that the state has a somewhat lower than average ratio of ophthalmologists, suggesting that optometrists are important in providing primary vision care to many citizens. In contrast to other health professional groups, optometrists tend to distribute more evenly into rural areas. The supply of optometrists has been boosted by the in-migration of optometrists; because of the state's generally high rate of growth, the need for services will also grow. Many of the services back to sending states will occur through a decentralized cooperative network of clinical training sites. The schools currently send their students off-campus for clinical experiences. Idaho now does not have such a site; under the proposed plan a clinical training site(s) would be established.

Benefits of the clinical training site mentioned included: encouraging students to return to the home state to practice; providing needed care (especially for those with low vision and the developmentally disabled); improving the quality of care by providing continuing education and other consultative services; that these clinics would keep some of the dollars within the state; improving the quality of clinical education by providing the student with exposure to different kinds of patients and treatment settings.

Bill McConnell discusssed the cost of the proposed plan and the current efforts to obtain outside funding to initially implement the plan; ongoing costs to be assumed by the states (after about thirty months) have been estimated at $200 to $400 per student a year. (Pre-mailed meeting materials which used a figure of $100 to $200 were in error).

A general question and discussion period followed. Questions raised included: how the $200 to $400 additional fee would be spent and how much would be used to support administrative functions in and between the schools; what the region's current enrollment potential is; what services and personnel are/should be at a clinical training site.

General comments included the following. There are some areas of the state which are so "rural" that they cannot support a practitioner. One rural community (Salmon) has indicated to the State Optometric Association that they would like to have an optometrist; the association has not yet been able to fill this position. It was noted that there are many inquiries from students about practice opportunities in the state; there is no coordinated and systematic way to effectively respond to those inquiries. The value of developing a regional data-based placement service was discussed. Some concern was voiced that even though optometrists do not have some of the problems common to other health professional groups (e.g., unwillingness to locate in rural areas), that the profession still needs to be supported by the state.

Particular needs that could be met by a school-sponsored clinic in Idaho included the elderly and others with low vision and the developmentally disabled --particularly the profoundly retarded. These are regarded as specialities which require special interest and equipment. Although there is a great need for these types of care, these patients are generally not served by private practitioners in the community; therefore clinics which might provide these types of care could deliver care which would not otherwise be available, and would not interfere with private practice patterns. The state's Chicano population, particularly migrant workers, were cited as a low income underserved group in the state; this group also tends to have a higher incidence of certain health/vision problems. Geographically, the area around the Nampa State School was identified as having both developmentally disabled and migrants who need vision care. The potential for increased demand for care and the opportunity to work with public schools brought about by PL 94-142 (education for the handicapped) was discussed.

There was concern that the plan address the totality of a state's needs, and not simply place a clinic in one site. It was suggested that the eastern part of Washington might serve the western edge of Idaho, and Utah the southern portion of the state. Rotational placement (of students) was also discussed.

The physician present pointed to the continuing education value of the WAMI program; having students around helps keep practitioners on their toes. A legislator also mentioned a similar result of having an intern on his staff, and urged that the optometrists might help support such a program. A reference was also made to the multidisciplinary team which tours the state to deliver care to cleft palate patients; this could provide another model for meeting state needs.

A note of caution was struck repeatedly with regard to Idaho's fiscal problem; almost any new program would have real trouble this year.

In concluding the meeting, everyone around the table was asked how they saw the plan:

-Concern that impact would be statewide; generally likes concept . . . problem with implementation funding

-The governor's budget is in for 1981 already; value of regional approach; what's in it for Idaho.

-A reasonable plan; a clinic could serve state's need--especially developmentally disabled; also provide support to practitioners.

-The added cost really small--at $400/student that would be $6,400 beginning thirty months from now.

-Good idea, could be used to coordinate needs of state; an investment in the future.

-Profession would be happy to serve on State Committee; like concept of clinical site; not a big (expensive) thing comparatively.

-Interesting; didn't hear real disapproval; but not yet because of 1 percent initiative.

-Commendation of reports; in spite of 1 percent things go forward.

In summary, the meeting had a positive tone.

As a result of this meeting, some materials used in the presentation will be slightly revised and corrected. In future state reviews it is suggested that:

- Invite all WICHE Commissioners to attend--they can be very helpful--they know constituency better than we and can help provide feedback and followup.
- Two WICHE staff should attend each review if at all possible--too much for one person to present, respond to questions, respond to diverse perspectives, as well as to assess interest/support of participants, and make notes.
- Someone in schools of optometry or on Advisory Committee should make contact with optometric association before state review meeting.
- It is most helpful to have SHEEO or other state official chair the meeting.

Copies of this summary have been sent for comment and correction to Commissioners Bistline & Jones, Dr. Trump and Donna Shepard.

SUMMARY OF MONTANA STATE REVIEW

Helena, Montana

April 10, 1980

The Montana state review of the regional plan in optometry was held in Helena on April 10. Participants included the following: Dr. Irving Dayton, Deputy Commissioner for Academic Affairs; Dr. Bill Tietz, President of Montana State University; Dr. John Anderson, Department of Health and Environmental Sciences; Ralph Gildroy, HSA; Dr. Frank Newman, WAMI at Montana State University; Senator Bill Thomas from Great Falls; Dr. Bill McGregor, WICHE Commissioner; Dr. Tom Rasmussen, state senator; Dr. Paul Kathrein, optometrist; Donald Pratt, Montana Optometric Association; Dr. Larry Clausen, Pacific University College of Optometry; and Leoti Waite, WICHE Certifying Officer. Susan Klein represented WICHE. Due to the absence of Commissioner John Richardson, the meeting was called to order by Paul Dunham.

Susan Klein welcomed attendees and thanked them for their participation in the review. She began by describing how the optometry project, funded by HEW, fit with the overall mission of WICHE (manpower, access and quality of education). In addition, she commented on the cost effectiveness of regional approaches which facilitate the sharing of scarce educational resources. The studies undertaken by WICHE have shown that the West will not need any new schools of optometry in the near future, that the resources of the three schools will be adequate. The importance of the state review process for WICHE's future directions with the plan was mentioned.

The purpose of the state review is: to assess the interest of Montana in the proposed plan, and to assess if this is a plan that WICHE should pursue.

The operation of the Professional Student Exchange Program (PSEP) was described as the existing mechanism which provides educational access for Montana students in the field of optometry. For the past several years the state has supported about 7.5 students per year in optometry; currently there are thirty-four students in the two private schools in the region. Various questions were asked about criteria for certification, deadlines and numbers of applicants. It was noted that only four students will be supported in optometry this year, although this number may increase if there are unused funds from other professions. It was also noted that the number of applicants has dropped significantly for optometry this year (1980-81, nine students; 1979-80, sixteen students; 1978-79, sixteen students; 1977-78, twenty-two students). Medicine has stayed about the same; dentistry and veterinary medicine have also dropped. It was suggested that the drop for optometry may reflect a lack of new practice opportunities, as well as declining interest in the health professions. There was also some discussion of the quality of Montana applicants, and their relatively high acceptance rate.

Data from the manpower report (presented in Tables 1, 2 and 3 in the bright blue report entitled, Vision Manpower Needs in the Western United States, were discussed. From a manpower perspective the state should support about seven students a year and from an access standpoint, about five; putting the two factors together the state should support at least six a year to maintain its current manpower ratio.

Two of the major goals of the plan are to: (1) provide educational opportunities; and (2) maintain an adequate supply of manpower. The proposed plan, however, does provide more to states than the existing PSEP. Through the proposed plan, (1) the schools would provide more services to Montana; (2) the quality of vision services in the state would be improved, and (3) graduates would be encouraged to return to Montana. Another major focus of the plan would strengthen the link between states and schools through a State Coordinating Committee. This Committee would coordinate input from state practitioners and others in identifying need areas for clinical training sites, and practice opportunities for new graudates. A question was asked about the interest of the schools in receiving input from the states.

The advantages of a cooperative network of clinical placement sites were discussed. The existing site with the PHS at Poplar was discussed. Questions were asked about the length and staffing of sites. Potential groups in need of services were mentioned, including those with developmental disabilities and learning disabilities, State School for the Blind, the university affiliated Program for Developmentally Disabled at the University of Montana, Veterans Administration Hospital in Helena, and Boulder Hospital for mentally retarded. Questions were raised about the adequacy of Montana's dispersed population in providing enough patients. The concept of rotating and mobile sites was raised.

The matter of cost was raised. Planning was done with the expectation of federal monies funding implementation; however, the probability of that now seems low. Operating costs, after implementation, have been estimated at $200 to $400 per student per year. At least one participant was interested in the details of that costing, suggesting that it appeared to be a bargain. Another suggested that it seemed like a low cost way to add to the quality of education.

There was considerable discussion of the clinical site concept. There was some concern voiced that these sites serve primarily an educational purpose, and that students should not be "used" to meet unmet needs. The optometrists liked the idea of a clinical site because of its potential for continuing education; however, reservations were expressed about the potential threat to private practices. The idea of an optometric education center was raised, along with the possibility of linking with the medical division of continuing education that has been developed at MSU.

The general consensus of the group was that the participants seemed interested in the plan and wished to further explore the potential development of a clinical site. In contrast to the attitude toward the developing regional approach to dentistry, the attitude toward the proposed optometric plan is positive. The matter will also be discussed by the Board of the State Optometric Association at the end of April.

SUMMARY OF NEVADA STATE REVIEW

Carson City, Nevada

February 28, 1980

The meeting was called to order at 9:30 a.m. by Dr. Don Driggs, WICHE Commissioner and Nevada's member on the Commission's Executive Committee. The others present were Dr. Patricia A. Geuder, WICHE Commissioner of Las Vegas; Dr. John H. Carr, Nevada State Health Officer and a member of the Advisory Committee for the WICHE Regional Optometry Project; Susan K. Atchison, WICHE Certifying Officer for Nevada; Lawrence E. Jacobsen, Nevada State Senator of Minden; Ronald W. Sparks, Senate Fiscal Analyst; William A. Bible, Assembly Fiscal Analyst; Mark Stevens, State Budget Division; Mervin J. Flanders, Bureau of Services to the Blind; Ida Straub, Executive Director of Nevada Optometric Association; Dr. Marvin Sedway, Secretary of the Nevada Optometric Association; Dr. William G. Van Patten, optometrist of Carson City; Dr. Richard L. Hopping, President of Southern California College of Optometry; and William R. McConnell, WICHE staff.

After each participant introduced himself, Chairman Driggs called on Bill McConnell to review the principal elements of the Regional Plan for Optometric Education in the West. He noted that the objectives of the plan are to provide equitable access to optometric education for residents of all the western states, to secure adequate numbers and distribution of optometric manpower throughout the region, to improve the delivery of primary vision services to the public, to enhance the quality of optometric education, and to assure the long-term stability of the western optometry schools in serving the entire region.

Turning to the manpower and access objectives, McConnell reviewed the findings of the manpower study done as a part of the project. Focusing on the question of how many places in the optometry schools should be provided for Nevada residents, he noted that from the standpoint of manpower requirements, Nevada shows a current ratio of optometrists to population which is quite low but which will improve if recent migration of optometrists to the state continues and if Nevada provides for about six students per class to enter optometry schools. From the standpoint of access to optometric education, provision for about four per class would give Nevada residents equitable access. Considering these two aspects together, he noted that a figure of five per class appears reasonable, which compares with a current provision of four per class under the WICHE Professional Student Exchange Program.

Susan Atchison distributed a comparison for the last six years of the numbers applying for certification and meeting basic eligibility requirements, against the numbers actually admitted and supported in the PSEP. This indicated that somewhat less than half of those eligible for certification are successful in engaging in an optometric education.

McConnell reviewed the provision for clinical sites which would provide eye care to underserved groups, improve optometric education, and permit all students to be given clinical experience in their home state, thus improving the likelihood of their choosing to practice in the home state. He noted the plan's provision for specific recruitment and placement activities which should also enhance the prospects for adequate numbers and distribution of optometrists in Nevada.

He pointed out that WICHE hoped to secure special outside funding for the implementation of the regional plan over the first two to three years. After implementation, the ongoing costs of the new features of the regional plan would be incorporated in the WICHE support fee, and this is estimated to add $200 to $400 per student per year to the existing level of the support fee. In response to a question he noted that the current rate is $4,500, that this will be adjusted for each of the next three years, and that the increase of $200 to $400 would be added effective in the 1983-84 fiscal year, assuming implementation funding becomes available by the end of 1980. He noted that there would not be any major fiscal impact from Nevada's participation in the regional plan.

McConnell briefly viewed the plan's provisions for cooperation among the schools through a School Coordinating Committee and for State Coordinating and Regional Coordinating Committees.

A general discussion ensued. Dr. Sedway noted that most Nevada students do return to Nevada for practice and some of these have located in the smaller communities. He observed that most towns of any size have either the full-time of the part-time services of an optometrist. Concern was expressed that residency eligibility may not be checked adequately in the cases of some applicants for certification.

The existing low vision clinical site in Las Vegas, operated by Southern California College of Optometry (SCCO) under contract with the State Bureau of Services to the Blind, was discussed and Mr. Flanders described its benefits. It was noted that the clinic's equipment is used by the local practitioners group in carrying out two other programs of services to special groups. There was some interest in whether one or more additional clinics might be established in the state, and Dr. Hopping expressed a willingness to cooperate in exploring the matter.

The sense of the discussion was that the regional program offers promise of benefiting Nevada, that the optometric profession is interested in cooperating in developing the plan, and that the ongoing communication and cooperation between Nevada interests and the optometry schools will provide the means for improving eye care over time and for dealing with problems as they arise.

SUMMARY OF NEW MEXICO STATE REVIEW

Santa Fe, New Mexico

March 12, 1980

The meeting was called to order at 1:30 p.m. by Robert Rhodes, Academic Coordinator, Board of Educational Finance. The others present were Dr. Lenton Malry, WICHE Commissioner of Albuquerque; Alfonso E. Ortiz, WICHE Commissioner of Las Vegas; Dr. Robert Vander Meer, optometrist of Las Vegas and a member of the Advisory Committee for the WICHE Regional Optometry Project; Eloy Martinez of Espanola, representing Mardoqueo Chacon, a member of the Advisory Committee; Fred Chreist, WICHE Certifying Officer for New Mexico; Margie Hepple, WICHE Coordinator in Mr. Chreist's office; Curt Porter, Budget Analyst, Legislative Finance Committee; Clay Buchanan, Director, Legislative Council Service; Al Clemons, Chief of Public School Finance, Department of Finance and Administration; Walt Eisenberg, Governor's Office; Mrs. Mickey Stuart, Administrative Assistant, Department of Health and Environment; Dr. Dana McQuinn, President, State Optometry Association; Mrs. Mary Silva, Executive Director, State Optometry Association; Dr. Charles Briggs, optometrist of Albuquerque; Dr. James R. Nicholson, optometrist of Santa Fe; Dr. Richard L. Hopping, President, Southern California College of Optometry; William R. McConnell, WICHE staff; Mrs. Lou Holmes, Board of Educational Finance staff; and Austin Basham, Board of Educational Finance staff.

After each participant introduced himself, Chairman Rhodes called on Bill McConnell to review the principal elements of the Regional Plan for Optometric Education in the West. He noted that the objectives of the plan are to provide equitable access to optometric education for residents of all the western states, to secure adequate numbers and distribution of optometric manpower throughout the region, to improve the delivery of primary vision services to the public, to enhance the quality of optometric education, and to assure the long-term stability of the western optometry schools in serving the entire region.

Turning to the manpower and access objectives, McConnell reviewed the findings of the manpower study done as a part of the project. Focusing on the question of how many places in optometry schools should be provided for New Mexico residents, he noted that from the standpoint of manpower requirements, New Mexico shows a current ratio of optometrists to population which is quite low, but which should improve if New Mexico provides for about seven students per class to enter optometry schools and if recent trends in migration and in New Mexico students returning to practice in the state continue. From the standpoint of access to optometric education, provision for about seven per class would give New Mexico residents equitable access. Considering these two aspects together, he noted that a figure of seven per class appears reasonable, which compares with a current provision of seven per class under the WICHE Professional Student Exchange Program and New Mexico's bilateral contract with the University of Houston.

Fred Chreist and Margie Hepple pointed out that seven as the current provision is incorrect. Currently a total of ten, six under WICHE and four under the bilateral contract, is New Mexico's provision for places.

McConnell reviewed the plan's provision for clinical sites which would provide eye care to underserved groups, improve optometric education, and permit all students to be given clinical experience in their home state, thus improving the likelihood of their choosing to practice in the home state. He noted the plan's provision for specific recruitment and placement activities which should also enhance the prospects for adequate numbers and distribution of optometrists in New Mexico.

He pointed out that WICHE hoped to secure special outside funding for the implementation of the regional plan over the first two to three years. After implementation, the ongoing costs of the new features of the regional plan would be incorporated in the WICHE support fee, and this is estimated to add $200 to $400 per student per year to the existing level of the support fee. Such increase would probably be reflected in the support fee in 1983-84. He briefly reviewed the plan's provisions for a Schools Coordinating Committee, a State Coordinating Committee in each state, and a Regional Coordinating Committee.

A general discussion ensued. It was pointed out that the proposed number of seven places per class for New Mexico optometry students would permit the state to reduce the number of supported places from the current ten, more than off-setting the probable increase of $200 to $400 in the per-student support fee and permitting the shifting of funds to other exchange fields where increased numbers of places are needed.

Some of the optometrists questioned whether the number of optometrists indicated by a target ratio of 11.4 per 100,000 population, would be able to develop economically feasible practices. There was some discussion of what groups and areas might be served by any added clinical training sites.

Dr. Hopping commented upon various aspects of the plan and the discussion from the viewpoint of the Southern California College of Optometry. He emphasized that demographic trends suggest that it may take increased recruitment efforts in the future to attract enough optometry students to meet future eye-care needs. He expressed a desire to work with New Mexico interests in implementing the regional plan to the meximum benefit of New Mexico.

Bill McConnell pointed out that to get maximum benefit from the regional plan, New Mexico may wish to shift the student places now supported at the University of Houston into the regional plan and use them for places at the three schools participating in the plan. Discussion of this indicated that there probably would be no problem in doing it.

The sense of the discussion was that the plan offers promise of benefiting New Mexico, that the optometric profession is prepared to cooperate in developing the plan, and that the fiscal impact for New Mexico will show a reduction of cost over what it would be if current provisions for exchange students were continued.

SUMMARY OF OREGON STATE REVIEW

Salem, Oregon

April 1, 1980

The meeting was called to order at 1:45 p.m. by Chancellor R.E. Lieuallen, Oregon State System of Higher Education, who is Oregon's member on the Executive Committee of the WICHE Commission. The others present were: Edith Maddron, member of the Oregon Educational Coordinating Commission and a member of the Advisory Committee for the WICHE Regional Optometry Project; Treasure Ann Wheeler, President of the Oregon Optometric Association and also a member of the Advisory Committee; Jason Boe, Oregon State Senator of Reedsport; Vickie Harbaugh, Health Planner with the Oregon Health Planning and Development Agency; Clem Lausberg, Research Coordinator for the Oregon Educational Coordinating Commission; Don Jones, optometrist of Eugene and Trustee at Pacific University; Dwyne Anne Adams, Executive Director of the Oregon Optometric Association; James Miller, President of Pacific University; Willard Bleything, Dean and Larry Clausen, Assistant Dean of the College of Optometry of Pacific University; and William R. McConnell, WICHE staff.

Chairman Lieuallen explained that Susan Klein, Director of the WICHE Regional Optometry Project who had been scheduled to attend this meeting had found it necessary to cancel at a late date, and that Bill McConnell was replacing her. After all participants identified themselves, he called upon Bill to review the principal elements of the Regional Plan for Optometric Education in the West.

McConnell noted that the objectives of the plan are to improve the provision of eye and vision care throughout the region, to meet the vision care manpower requirements and the optometric education needs of all the thirteen western states, to improve the quality of optometric education, and to assure the long-term stability of the western optometry schools in serving the entire region. He pointed out the plan's provisions for special efforts in recruitment of students from among minorities and women as well as those who might be most likely to practice in underserved areas, and the provision for placement activities designed to better inform graduating optometrists of practice locations needing their services. He noted the importance of off-campus clinical training sites in improving optometric education, in serving unmet vision care needs, in furthering continuing education for practitioners, and in encouraging students to practice in underserved areas or with underserved populations.

McConnell reviewed the findings of the manpower study done as part of the WICHE project. Focusing on the number of Oregon students to be supported in each entering class in optometry schools, the analysis indicates that from the standpoint of meeting reasonable future manpower objectives this number should be about six, while to provide a reasonable and equitable level of student access the number might need to be about twelve. When these two aspects are combined, the plan suggests a figure of ten, which is comparable to the annual numbers supported through the WICHE Professional Student Exchange Program (PSEP) in recent years, except that for 1980-81 seven entering students are being supported.

He noted the plan's provision for sharing of resources among the three schools working through a schools coordinating committee and the provision of state advisory committees and a regional advisory committee. He explained that special funding is being sought for the implementation of the regional plan over a period of two to two and one-half years. After the initial implementation, the ongoing costs of the new features of the regional plan would be incorporated in the WICHE support fee. These added costs are estimated to amount to $200 to $400 per student per year.

The participants discussed various aspects of the plan. Senator Boe cautioned the group to be mindful of the budget crunch facing Oregon when considering how the plan can be implemented in this state. He observed that clinical sites serving presently underserved areas would be a strong selling point in Oregon. Vickie Harbaugh noted that there are no formally designated health shortage areas in Oregon having to do with optometric care. Dean Bleything pointed out that this is a function of them being "designated" rather than a function of there being in existence. There are underserved populations such as the ones served by his school's Portland clinic. He noted that migrant workers' needs should be met. Treasure Ann Wheeler stressed the importance of the plan's provisions for clinics and for improved continuing education for practitioners. She was joined by Dean Bleything in pointing out the prospects for more linkages between optometrists and other health care professionals through the clinics. President Miller noted the potential impact of screening of children's vision problems and early correction to avoid the later learning disabilities he has observed. Dean Bleything said the placement component is something not now really available in optometry and is important.

Clem Lausberg observed that he had requested and received alternate calculations of the number of students to be supported for Oregon based on alternate assumptions, and he suggested that these alternate assumptions might be applied to the data for the other states as well. He asked for a clarification of the rationale for a figure of ten rather than 7. Bill McConnell explained that the number ten was based on an attempt to balance the considerations of manpower and access. Dean Bleything pointed out that from the manpower standpoint, the numbers are based on present levels of service and would change if you assumed that national health insurance or other developments would lead to increased levels of service. Lausberg asked about the calculations in relation to Oregon students over and above those "supported" and McConnell stated that the calculations assumed that the number of Oregonians supported would be the number attending.

Larry Clausen pointed out that the reviews in many of the states had identified a high level of interest in the plan. Since federal funds will be tight, we must be prepared to examine other ways of implementing the plan if special funding is not forthcoming. The annual level of funding proposed for initial implementation is not too different from the level projected for the ongoing costs of the new features (the $200 to $400 per student per year). Dean Bleything said that the final regional plan needs to include a "Plan B."

President Miller noted that the Board and administration of Pacific University support the plan, and Treasure Ann said that the Optometric Association strongly supports it and is pledged to help. Clem Lausberg observed that the Educational Coordinating Commission supports the concept and suggested that the method should be applied to other professional fields. There was general agreement that the plan is desirable for Oregon.

REACTION TO THE WICHE REGIONAL PLAN FOR OPTOMETRIC EDUCATION IN THE WEST

Office of Academic Affairs
Dr. Leon R. McCarrey
February 26, 1980

REACTION TO THE
WICHE REGIONAL PLAN FOR OPTOMETRIC EDUCATION IN THE WEST

Recently the Office of the Commissioner received a copy of the "Regional Plan for Optometric Education in the West;" prepared by the Western Interstate Commission on Higher Education (WICHE).[1] This plan recommends the further development of the WICHE Professional Student Exchange Program (PSEP) principally by establishing a school-sponsored clinical training site in each participating state. The proposed regional plan would continue to guarantee a minimum number of slots for qualified applicants from Utah to the three optometric schools operating within the WICHE Compact.[2] Efforts are now underway to obtain federal dollars to initiate the WICHE Regional Plan for Optometric Education. After the initial implementation, WICHE PSEP support fee would incorporate ongoing costs of the new features of the plan. This would amount to a projected added cost (1983-84) of about $200 to $400 (the current WICHE fee is $4,500 per year per student supported).[3]

As stated in the WICHE Regional Plan, there are basically two reasons for Utah to be involved with regional optometric education:[4]

(1) to provide adequate access for Utah's students to study optometry; and

(2) to educate sufficient Utahns that those returning to practice will meet the state's manpower needs in optometry

In an attempt to determine what constitutes adequate access to schools of optometry, WICHE examined comparative state figures; viz.: total state population, bachelor's degrees awarded in Utah, and the numbers of high school graduates. Comparing these data, see Table 2, WICHE postulates that Utah should provide access to schools of optometry for 9 new students annually. This figure represents 4.6 percent of the calculated number (195) of new students who annually would enter schools of optometry in the 13 WICHE states.[5] Currently, the state is providing WICHE PSEP funds for 4 new optometric students per year. An average of three additional Utah students have enrolled in optometry without state support. Thus, in Utah a total of seven new students enroll annually in optometry; totaling 35 students in the five-year programs.[6]

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[1] *Susan D. Klein, A Regional Plan for Optometric Education in the West (Boulder: WICHE, February 5, 1980).*

[2] *Ibid.*

[3] *WICHE, The Regional Plan as it Applies to Utah (Boulder: February 5, 1980).*

[4] *Susan D. Klein, op. cit., p. 3.*

[5] *Ibid., p. 5.*

[6] *Ibid., p. 6.*

In order to estimate state need, manpower statistics comparing the numbers of optometrists, in a given population, were undertaken within the nation and regionally. According to WICHE: "Judgments about what is an adequate manpower ratio vary between 10.0 and 15.0 optometrists per 100,000 population."[7] In 1978, the average for the 13 state WICHE region was 11.4 optometrists per 100,000; varying widely among states. Eight of the 13 states had ratios below this value (Alaska, Arizona, Colorado, Hawaii, Nevada, New Mexico, Utah, and Washington). The other five states had higher ratios (California, Idaho, Montana, Oregon, and Wyoming). However, from Table 1 it is evident that Utah (6.7 per 100,000) is clearly the lowest in the region. If Utah wishes to equal the regional average of 11.4 optometrists per 100,000 by the year 2000, we should enroll 12 new students annually in the schools of optometry.[8] This would represent an increase of 5 additional students per year (+71%) over the current number (7 new students annually); a total of 60 students enrolled in the five-year program.[8]

By comparing both the numbers estimated necessary to provide for reasonable student access (Table 2), and the numbers estimated to meet reasonable manpower needs (Table 1), the WICHE report estimates 188 new students annually in the 13 WICHE states; suggesting 10 new students per year to meet Utah needs (5.3% of total). This would increase our present enrollment by three students per year, or the total five-year program enrollment by 15 optometry students. Presumably, the presence of a clinical training facility in Utah would increase the current numbers of Utah students who would return to the state to practice. Moreover, the presence of the facility may increase the desire of students from other states, that currently have an oversupply of optometrists to practice in Utah.[9]

Data contained within the WICHE "Regional Plan for Optometric Education in the West" appear accurate; reflecting concern for potential optometrical services to the citizens of Utah. Even when the numbers of opthamologists per 100,000 are added to the numbers of optometrists per 100,000, Utah still appears to be underserved for eye care.[10] In spite of the fact that Utah has a more favorable ratio of opthalmologists to optometrists, the combined ratio is still one of the lowest in the 13 WICHE states. Utah has a combined average of 11.8 opthalmologists and optometrists per 100,000 compared to the regional average of 17.1. The lowest state ratios are 11.7 for New Mexico and Alaska (see Tables 4 & 5).[11]

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[7] *WICHE Brochure, "Regional Optometric Education Project: A Plan"*

[8] *This assumes students will return to Utah at the same rate--18 out of 35--and that migration will remain stable.*

[9] *Susan D. Klein, op. cit., pp. 5-6.*

[10] *Ibid., pp. 6, 8-10.*

[11] *Ibid., pp. Appendix B-5, B-6.*

Concluding statements from the study follow, with brief comments of explanation:[12]

- Utah does not attract adequate numbers of optometrists to serve its citizenry when compared with the other Western States (few optometrists migrate to Utah; only 18 out of 35 native Utahns returned to Utah after completing their degree--51%).

- To increase the nmmber of optometrists in the state would appear to require effort on two fronts: (1) increase the number of Utahns who are enrolling per year by at least 3; 7 per year to 10 per year; and (2) establish a clinical training site in Utah which will hopefully increase the numbers of students remaining in Utah after training. (The latter conclusion assumes that graduates are more apt to remain in the state in which they have taken their clinical experience.)

- Since the three schools of optometry in the Western region--the Pacific University College of Optometry, Southern California College of Optometry, and the University of California/Berkeley School of Optometry--are able to admit about 250 new students per year, there is no need to establish another school of optometry in the West.

- Since only three out of seven Utah students are currently going to optometry school without benefit of funds from the WICHE PSEP program, it may be necessary for the state to support seven students per year (total 35) rather than the current number of four students per year (total of 20). If Utah were to elect this concept of increasing the numbers of optometrists in the state, it would cost the state an additional $67,500 (total of 15 more students in all five years times $4,500 per student per year). Moreover, after 3-4 years, the added costs of the clinical training sites in Utah would add $200 to $400 to the WICHE PSEP costs.

- Balancing these added costs are other issues that the Legislature may consider before increasing the costs for optometric education: low demand for eye care in Utah, low per capita income in Utah, low status for the profession in the state, strong Department of Opthalmology and residency program in the state, and some rather unfavorable practice conditions in the state (of Utah's 29 counties, 13 lack an optometrist, partially because the largest of those counties has a population of only about 12,000).

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[12] *Ibid.*

TABLE 1

ANNUAL ENROLLMENTS IN ENTERING CLASS CALCULATED TO MEET REASONABLE MANPOWER OBJECTIVES

	Optometrists Per 100,000 Population				
State	Current Ratio 1978	Reasonable Objective 2000[1]	Annual Enrollment in Entering Class to Meet Objective[2]	Special Considerations[3]	Indicated Number from Standpoint of Manpower
ALASKA	9.2	11.4	0.0	Sparcity of population. Needs of native groups.	1
ARIZONA	8.4	11.4	7.4	Proportion of aged population requiring greater care.	9
CALIFORNIA	12.5	12.5	79.6		80
COLORADO	9.3	11.4	15.5	Prospective energy boom may prove population projection to be low.	16
HAWAII	9.4	11.4	3.7		4
IDAHO	12.2	12.2	0.4	Low ratio of ophthalmologists	1
MONTANA	15.1	15.1	7.6	Present very high ratio. Low ophthalmologist ratio	7
NEVADA	8.3	11.4	6.1		6
NEW MEXICO	7.4	11.4	6.4		7
OREGON	13.6	13.6	6.1		6
UTAH	6.7	11.4	12.4		12
WASHINGTON	9.9	11.4	22.7	Migration measure probably reflects abnormal period of soft economy. Recent heavy in-migration probably has reversed that reading.	18
WYOMING	13.0	13.0	0.0	Population projections--probably low.	0
REGION	11.4	12.2	167.9		167

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[1] Those now above regional average are kept at current ratio. Those now below are raised to regional average.

[2] Assumes students return to home state at recent rate and assumes migration at recent rate. (p. 80, Vision Manpower Needs in the Western States).

[3] See state summaries in Vision Manpower Needs in the Western States, from page 85 on.

TABLE 2

ANNUAL ENROLLMENTS IN ENTERING CLASS CALCULATED TO MEET REASONABLE STUDENT ACCESS OBJECTIVES

	Column 1		Column 2	Column 3			Column 4	Column 5
	Average for 1975-1977 Entering Classes			Ratio of Number[3] in Preceding Column Per 1,000 High School Grads 4 Years Earlier				
State	a Number[1] per 100,000 Population	b Number per 100[1] Bachelor Degrees Granted in State	Number[2] Needed/1980 Population to Meet Region Average (.50)	a 1979-1981	b 1984-1986	c 1989-1991	Special Considerations	Indicated Number from Standpoint of Student Access
ALASKA	.40	.33	2	.443	.358	.403		2
ARIZONA	.35	.09	13	.494	.444	.464		12
CALIFORNIA	.45	.12	112	.417	.445	.508	As in other professional fields, California can be expected to have significant numbers enrolled in schools outside region	95
COLORADO	.38	.07	14	.392	.381	.419		15
HAWAII	.82	.20	5	.439	.436	.535		5
IDAHO	.51	.15	5	.335	.334	.339		5
MONTANA	1.27	.26	4	.326	.348	.419	High interest & past generous support	5
NEVADA	.86	.37	3	.394	.335	.365		4
NEW MEXICO	.71	.17	6	.332	.330	.400		7
OREGON	.57	.13	12	.393	.403	.428		12
UTAH	.54	.07	7	.354	.350	.351		9
WASHINGTON	.45	.10	18	.353	.362	.396		20
WYOMING	1.61	.50	2	.348	.326	.328	State's policy of providing great access in many professions	4
REGION	.50	.12	203	.402	.413	.460		195
U.S.	.49	.12						

[1] Vision Manpower Needs in the Western States, page 59. Also, see footnotes there.

[2] 1980 population from individual state tables in Vision Manpower Needs in the Western States.

[3] High school graduates from Projections of High School Graduates in the West, published by WICHE, June 1979.

TABLE 4

SUPPLY OF OPTOMETRISTS IN WICHE REGION
1973 and 1978

State of Practice	Licensed[1] Optometrists 1973	Active[1] Optometrists 1973	Active O.D.s[1] Per 100,000 Population 1973	Licensed[2] Optometrists 1978	Estimated[3] Active 1978	Active O.D.s[4] Per 100,000 Population 1978
ALASKA	18	18	5.5	37	37	9.2
ARIZONA	180	149	7.2	239	198	8.4
CALIFORNIA	2820	2421	11.7	3248	2793	12.5
COLORADO	220	208	8.4	262	249	9.3
HAWAII	88	74	8.8	100	84	9.4
IDAHO	89	85	11.0	112	106	12.2
MONTANA	109	101	13.8	128	119	15.1
NEVADA	57	48	8.7	65	55	8.3
NEW MEXICO	87	80	7.3	98	90	7.4
OREGON	337	305	13.7	367	334	13.6
UTAH	87	75	6.5	102	83	6.7
WASHINGTON	435	385	11.2	422	373	9.9
WYOMING	40	40	11.3	55	55	13.0
REGION	4567	3989	10.9	5235	4581	11.4

SOURCES:
1. Optometric Manpower Resources, 1973. Prepared for Bureau of Health Manpower, HRA, USDHEW (1976).
2. 1978-79 State Licensing Rosters.
3. Number Active estimated by multiplying total licensed by proportion active in 1973.
4. 1978 population--U.S. Census Bureau. P-25, No. 794, March 1979.

NOTE: There are approximately 20 additional O.D.s working for the Public Health Service in the WICHE region that are not included in the 1978 figures above.

TABLE 5

COMPARISONS OF RATIOS OF OPTOMETRISTS AND AMA LISTED OPHTHALMOLOGISTS FOR WICHE STATES

		Ratio of 1978 Active O.D.s to 100,000 Population, 1978	Ratio of 1976 AMA Listed Ophthalmologists to 100,000 Population, 1976	Ratio Combined O.D.s & Ophthalmologists to 100,000 Population	Ratio of Ophthalmologists to Optometrists
	ALASKA	9.2	2.5	11.7	.27
*	ARIZONA	8.4	5.4	13.8	.64
*	CALIFORNIA	12.5	6.1	18.6	.48
*	COLORADO	9.3	5.5	14.8	.59
*	HAWAII	9.4	5.3	14.7	.56
	IDAHO	12.2	4.6	16.8	.38
	MONTANA	15.1	5.0	20.1	.32
	NEVADA	8.3	4.7	13.0	.56
	NEW MEXICO	7.4	4.3	11.7	.58
*	OREGON	13.6	6.7	20.3	.48
*	UTAH	6.7	5.1	11.8	.76
*	WASHINGTON	9.9	5.3	15.2	.53
	WYOMING	13.0	4.3	17.3	.33
	REGION	11.4	5.7	17.1	.50

SOURCES: 1978 active optometrists--estimated from 1978-79 state licensing board rosters.

1976 ophthalmologists--Physician Distribution and Medical Licensure in the U.S., 1976. Louis Goodman Center for Health Services Research and Development, American Medical Association, Chicago, 1977.

1978 state population--U.S. Bureau of the Census, Series P-25, No. 794, 1979.

1976 state population--U.S. Bureau of the Census, Series P-25, No. 738, 1978.

NOTES: AMA totals of ophthalmologists include board certified and non-certified practitioners.

Combining of ratios from different years assumes that while population and supply may change between 1976 and 1978, the ratio of ophthalmologists to population stays relatively constant for that period.

* State has a residency program in ophthalmology.

SUMMARY OF WASHINGTON STATE REVIEW

Olympia, Washington

March 26, 1980

Dr. Chalmers Gail Norris, executive coordinator of the Washington Council for Postsecondary Education, chaired the state review meeting in Olympia. Others attending were: Willard B. Bleything, dean, College of Optometry, Pacific University; Ron Bussinger, president, Washington Optometric Association; William Chance, deputy coordinator for academic affairs, Washington Council for Postsecondary Education; Larry Clausen, assistant dean, College of Optometry, Pacific University; Denis Curry, deputy coordinator for finance, Washington Council for Postsecondary Education; Lin Floyd, Senate Higher Education Committee; Tom Galbraith, Office of the Governor; Lyle Jacobsen, director, Office of Financial Management; Steve Jaffe, optometrist; State Representative Mike Kreidler; Shirley Ort, associate coordinator for financial assistance, Washington Council for Postsecondary Education; William Robinson, Office of Financial Management; Patricia Starzyk, Center for Health Statistics, Department of Social and Health Services; Glenn Terrell, president, Washington State University, and WICHE Commissioner; State Representative Delores Teutsch; Frederick Thieme, curator for the Burke Museum and WICHE Commissioner; and Susan Klein and Phillip Sirotkin of the WICHE staff.

Dr. Norris began the meeting with a description of Washington's involvement in WICHE programs and he expressed his conviction that the likelihood of more limited resources available in the future will make the type of resource sharing activities for which WICHE is the facilitating agent of increasing importance. His particular interest in the review of the regional plan for optometric education was to learn how it would differ from the present Student Exchange Program (SEP).

As the WICHE staff representatives, Phil Sirotkin and Susan Klein explained the objectives and reviewed the details of the proposed regional plan. It also was pointed out that in terms of the indicators of access and manpower needs, Washington should be supporting approximately double the eleven students per year currently in SEP. There was considerable discussion about the reasons for the lower ratio of optometrists per 100,000 population in Washington compared with the regional average and the national picture. Some of the factors cited were low in-migration of optometrists, the resistance from the medical profession to comparable reimbursement from insurance to optometrists for basic vision care, and the adverse effects of this policy in making the state economically attractive to optometrists. This led to questions about the conflict between opthamologists and optometrists, optimal use of health resources, and cost effectiveness. Discrimination on the use of diagnostic drugs in Washington as contrasted with public policy in the surrounding states also was cited as a deterrent in attracting more optometrists to practice in the state.

There was extended discussion of the desired ratio of optometrists per population and the problem of maldistribution of vision care manpower. Several persons in the group cited examples of areas of critical need for services in the state, including metropolitan Seattle. There was a clear consensus that one of the most desirable features of the proposed regional plan involved the clinical training site concept and the related possibility of having a larger share of the supported students remain in the state as practitioners. Also, the statewide coordinating committee, which would be created as an integral part of the plan, was perceived as a potentially effective instrument for recruiting more students, especially women and minorities.

There was a review of how the clinical training sites would operate with reference to supervision, types of service provided, and physical location. Also, it was suggested that, while separate legislation might not be required for the state to participate in the regional program, it would be wise to inform several legislators about the matter to gain their understanding and support. One member of the group queried the representatives of the professional association about the reaction to increasing the supply of optometrists within the state.

In response to another question, it was explained that without federal funding support the particular plan being proposed could not be implemented, since several states have already indicated their inability to provide the necessary funds much before the recommended thirty-month period. However, there was an interest on the part of several persons in the group to explore ways of implementing some aspects of the plan in the event that federal support funds were not forthcoming. The problem is that the high cost for the initial investment in various components of the program could not be provided by most of the states at this time. Nevertheless, the point was made that elements of this plan might be adopted in a relationship between Pacific University and the State of Washington. A spin-off, positive effect of this project, it was said at the meeting, is to open areas for exploratory, cooperative efforts between some of the WICHE states and the schools of optometry, especially in the clinical site matter. On the other hand, some members indicated that while certain aspects of the proposed model in the regional plan might be adopted on a limited basis, there were decided advantages to pushing for the total program because the focus was on pooling the resources for the three educational institutions rather than restricting a sub-regional effort to only one of the schools.

It was agreed that for the May meeting of the advisory committee a contingency plan should be developed to provide an alternative or set of alternatives in the event that federal funds are not likely to be available for implementation of the proposed regional program. The support for moving ahead, if at all possible, with the regional program was uniformly strong from all of the participants in the meeting. Dr. Norris offered to extend help from his office and requested to be kept informed of developments so that they would be able to maximize their assistance.

SUMMARY OF WYOMING STATE REVIEW

Laramie, Wyoming

May 1, 1980

Dr. James Boucher, a practicing optometrist and member of the advisory committee on the Regional Optometric Education project, chaired the state review meeting. Others attending were: James Hollon, president of the Wyoming Optometric Association; Edward Jennings, president of the University of Wyoming and a WICHE Commissioner; Dan Lex, executive director of the Wyoming Health Care Association; Richard Neibaur, director of the Wyoming Health Systems Agency and project advisory committee member; William Pancoe, Wyoming certifying officer for the WICHE Student Exchange Program; and Phillip Sirotkin, executive director of WICHE.

Phil Sirotkin began the meeting with a description of the background of the project and the principal objectives of the proposed regional plan.

One of the key questions raised by the state participants at the meeting dealt with the advantages of the proposed plan over the current bilateral agreements that Wyoming has with the two private schools of optometry in the West. Although there was general agreement that the clinical training site was a decided strength in the regional plan, there was some concern that the flexibility in the bilateral contracts was of considerable value to the states. Specifically, the question was asked about whether the state would be limited in having access for any number of its students who would be qualified and financially supported by Wyoming funds. Phil expressed his view that the program would not in any way inhibit admission of such students since both private institutions are presently admitting a significant number of western students in excess of the total WICHE Student Exchange Program as it now exists and as it would operate under the proposed plan. He believed there would be sufficient places for all qualified students who would carry the proposed support fee level with them.

Another issue of concern involved the implication of guaranteeing a minimum number of students to the receiving institutions. The concern was what would be the obligation of any one state, especially to Wyoming, if the minimum was not realized. It was indicated that the legislature would not be willing to pay for spaces not being used by Wyoming students. Phil indicated that one of the advantages of having all of the states participating in such a program was the flexibility in adjusting the numbers from any one state from year to year and still be able to provide a reasonable pool of students. He described the arrangement developed with Colorado State University as a potential prototype with a minimum and maximum from each sending state and a rolling average. There could be some adjustments yearly within these ranges for any single state. In some instances where a state might not meet the minimum, this slack could be assumed by other states. Likewise, a state could exceed its maximum figure since it is reasonable to assume that some states would not have a sufficient number to meet its minimum every year.

There also was some discussion about underserved counties in the state in terms of practicing optometrists. It was pointed out that, while Wyoming currently enjoys a very favorable ratio of practitioners per population, the age distribution of those now practicing in the state suggests that in the next ten to fifteen years there could very well be a serious shortage.

The consensus was supportive of the proposed plan with a few conditions. First, there would have to be assurance that the flexibility of the existing bilateral contracts would be maintained in terms of assuring access. Second, there would have to be written agreements stipulating what would happen if the state wished to send more than its maximum and what its obligation would be if there was a regional minimum which was not met.

ADDENDUM D

COSTING AND FINANCIAL PLAN MATERIALS

ADDENDUM D

TOTAL IMPLEMENTATION BUDGET

TOTAL IMPLEMENTATION BUDGET

		Year 1			Year 2			Year 3	
A. Colleges of Optometry									
1. Personnel	FTE			FTE			FTE		
Program Coordinator	.50	$ 16,000		.50	$ 16,000		.50	$ 16,000	
Secretary	.50	5,000		.50	5,000		.50	5,000	
Clinic Director	[.25	7,500]*		[.20	6,000]		[.10	3,000]	
Faculty Support	.50	12,500		.50	12,500		0		
		41,000			39,500			24,000	
Fringe Benefits-15%		6,150	[1,125]		5,925	[900]		3,600	[450]
Total Personnel		$ 47,150			$ 45,425			$ 27,600	
2. Travel									
School coordinating meetings (3 trips x 2 persons x $350)		2,100			2,100			$ 1,400	
Faculty Development Program (1 trip x 4 persons x $300)		1,200			1,200			1,200	
Miscellaneous		800			800			800	
Total Travel		$ 4,100			$ 4,100			$ 4,100	
3. Other									
Development of instructional material & evaluation instruments		5,000			1,000			1,000	
Telephone & Postage		1,200			1,200			1,200	
Supplies & Copying		1,700			1,700			1,700	
Total Other		[$ 7,900]			[$ 3,900]			[$ 3,900]	
Total of 1, 2, & 3 for each college		$ 59,150			$ 53,425			$ 34,900	
4. Overhead									
PUCO (50% of salary & benefits)		23,575			22,713			13,800	
SCCO (73.8% of salary & benefits)		34,797			33,524			20,364	
UCB (34.2% of salary & benefits)		16,125			15,535			9,439	
TOTAL (for all 3 colleges)		$251,947			$232,047			$148,308	
TOTAL (minus in-kind contributions)		$235,422			$221,247			$140,958	

***Brackets [ ] mark those amounts that would be provided by in-kind contributions.**

TOTAL IMPLEMENTATION BUDGET
(Continued)

	Year 1	Year 2		Year 3	
B. Outreach Clinics					
1. Personnel					
1 FTE faculty @ 3 new sites @ $30,000	0	$ 45,000*	[30,000]	$ 90,000	[60,000]
1 secretary/receptionist @ 3 new sites @ $10,000	0	15,000	[10,000]	30,000	[20,000]
		60,000		120,000	
Fringe Benefits-15%		9,000	[6,000]	18,000	[12,000]
Total Personnel	0	$ 69,000		$138,000	
2. Equipment					
Varies by size & scope of clinic (see discussion)					
Minimum costs for a full scope clinic: 1 faculty & 3 students $92,000 @ 3 sites (one time only cost)	0	276,000	[176,000]	0	
3. Travel					
Faculty development program (1 trip x 13 persons x $350)	4,550	4,550		4,550	
4. Overhead					
(50% of salaries & benefits)		34,500	[22,770]	69,000	[46,000]
TOTAL	$ 4,550	$384,050		$211,550	
TOTAL (minus in-kind contributions)	$ 4,550	$139,280		$138,000	
C. Placement Network					
Personnel	6,000	6,000		Network becomes self-supporting from fees.	
Travel	1,000	1,000			
Supplies, materials	500	500			
Data base maintenance and repair costs	500	500			
Start-up costs	2,300	0			
Publicity	6,855	6,855			
TOTAL (for placement network)	$ 17,155	$ 14,855		$ 0	

*This figure assumes clinics would not be operational until mid-year.

TOTAL IMPLEMENTATION BUDGET
(Continued)

		Year 1		Year 2		Year 3
D. **State Coordinating Committees**						
Personnel						
Costs assumed by participants						
Travel						
3 meetings per year (3 trips x 5 persons x 13 states x $100)		$ 19,500		$ 19,500		[$ 19,500]
E. **Regional Advisory Committee**						
Personnel						
Costs assumed by participants						
Travel						
2 meetings (2 trips x 19 persons x $350)		13,300		13,300		[6,650]
F. **WICHE Administrative Costs**						
Personnel	FTE		FTE		FTE	
Project Director	.75	24,000	.50	16,000	.50	16,000
Secretary	1.00	12,000	1.00	12,000	1.00	12,000
		36,000		28,000		28,000
Fringe Benefits-19.2%		6,912		5,376		5,376
Total Personnel		$ 42,912		$ 33,376		$ 33,376
Travel						
15 meetings x $350		5,250		3,500		3,500
Other						
Telephone & Postage		1,200		1,200		1,200
Supplies & Copying		1,700		1,700		1,700
Office Rent		1,600		1,600		1,600
Overhead (55.3% of salaries & benefits)		23,730		18,456		18,456
TOTAL		$ 76,392		$ 59,832		$ 59,832

TOTAL IMPLEMENTATION BUDGET
(Continued)

	Year 1	Year 2	Year 3
G. Newsletter			
Editorial Support	$ 3,000	$ 3,000	$ 3,000
Printing (4 issues per year)	8,000	8,000	8,000
TOTAL	[$ 11,000]	[$ 11,000]	[$ 11,000]

COST SUMMARY FOR IMPLEMENTATION

	Year 1	Year 2	Year 3
A. Colleges of Optometry			
PUCO	$ 82,725	$ 76,138	$ 48,700
SCCO	93,947	86,949	55,534
UCB	75,275	68,960	53,778
B. Outreach Clinics	4,550	384,050	211,550
C. Placement Network	17,155	14,855	0
D. State Coordinating Committees	19,500	19,500	19,500
E. Regional Advisory Committee	13,300	13,300	6,650
F. WICHE Administrative Costs	76,392	59,832	59,832
G. Newsletter	11,000	11,000	11,000
TOTAL	$393,844	$734,584	$466,544

COST SUMMARY--MINUS IN-KIND CONTRIBUTIONS

	Year 1	Year 2	Year 3
A. Colleges of Optometry	$235,422	$221,247	$140,958
B. Outreach Clinics	4,550	139,280	138,000
C. Placement Network	17,155	14,855	0
D. State Coordinating Committee	19,500	19,500	0
E. Regional Advisory Committee	13,300	13,300	0
F. WICHE Administrative Costs	76,392	59,832	59,832
G. Newsletter	0	0	0
TOTAL	$366,319	$468,014	$338,790

BUDGET JUSTIFICATION

A. Colleges of Optometry

1. Personnel

a. Program Coordinator--1.50 FTE

Senior level administrator who will coordinate overall regional program activities for the college, including budget, admissions, instruction, evaluation, continuing education, and manpower placement. Principal program liaison with other optometry colleges, WICHE, state optometric associations, state and federal government, and the public.

b. Secretary--.50 FTE

The 50 percent secretary will be required to provide staff assistance to the Program Coordinator as well as other college staff contributing to the project. In addition to clerical duties, the secretary will be responsible for routine telephone and written communication.

c. Clinic Director--.25 FTE

During the development phase, will be responsible for directing the development of one new outreach clinic, developing learning resource material for outreach programs, determining teaching mode for shared clinical programs, and selecting outreach clinical staff. Will also participate in school coordinating meetings, faculty development seminar, and outreach clinic site visits. (0.25 FTE is equal to 55 working days. This estimate is based on 29 days of development activities and 26 days of travel.)

d. Faculty Support--.5 FTE

Various faculty will be required to assist in developing learning resource materials and evaluation instruments; coordinating graduate and library programs; assisting in the regional admissions program; and assisting in the faculty development program. Some faculty will travel to the faculty development program, outreach clinics, and to school coordinating meetings. (0.5 FTE is equal to 110 working days. This estimate is based on 92 days of development and 18 days of travel.)

2. Travel

Adequate travel funds are essential for developing and coordinating the overall program. The table below outlines the minimum expected travel for each college. Travel which will be funded from the college's budget is identified. The remaining travel would be funded by other sources.

Position	Travel	Est. Days of Travel	College Budget
Project Coordinator	3 school coordinating meetings @ $350	5	$1,050
	2 regional advisory meetings	4	0
	4 state coordinating meetings	6	0
Faculty	6 outreach clinics	9	0
	1 faculty development program @ $300 x persons	9	900
Miscellaneous	4 trips @ $200*	4	800
Director of Clinics	3 school coordinating meetings @ $350	5	1,050
	12 outreach clinics	18	0
	1 faculty development program @ $300	3	300
TOTAL		63	$4,100

*It is projected that at least four trips will be required to meet with legislators and staff or to confer with state associations or WICHE. Such travel may also involve the chief administrator of the college, but funds are requested only for the Program Coordinator. This travel is estimated at $200 per trip.

3. Other Costs

The proposed program requires that mutually acceptable teaching modes be established at the various clinical sites to facilitate the training of students from several schools at one site. To accomplish this, it is envisioned that teaching syllabi and other educational materials need to be developed as well as student, site, and program evaluation instruments prepared. These activities will incur printing, photography, consultant, and communication expenses. The total estimate is $5,000.

The office of the regional Program Coordinator will incur miscellaneous office expenses, such as phone, duplicating charges, supplies, and postage. Supplies will be required for the School Coordinating Committee meetings and the faculty development program. Telephone and postage are estimated at $100 per month; office and meeting supplies, $1,700 per year.

B. Outreach Clinics

1. Personnel

The development of three new outreach clinics is proposed. Based on the past experience of the schools, the first-year expenses for operation require approximately $40,000 in personnel costs. This includes support for a full-time clinical faculty position and a secretary/receptionist position.

The full-time faculty member would hold an academic appointment with at least one of the colleges. This person would be the responsible faculty at the outreach sites. In addition to teaching and student evaluation responsibilities, this faculty member would participate in clinical curriculum planning, assist in placement of students, coordinate local continuing education activities, and assist in program evaluation activities.

The secretary/receptionist would be required to provide secretarial support to the outreach clinical faculty as well as be responsible for patient scheduling, clinic records, and associated receptionist duties.

2. Equipment

Costs vary according to the scope, size, and location of the clinic. These costs can range from $102,000 to $325,000 per clinic.

3. Travel

One faculty development meeting will be held to provide orientation and in-service training relative to the regional program, clinical teaching methods, and student evaluation procedures. One faculty person from one outreach clinic in each state will attend (13 persons x 1 trip x $350 = $4,550).

C. Placement Network

The placement network would be implemented through a contractual arrangement with the National Health Profession Placement Network based at the University of Minnesota. The budget estimates reflect expected expenditures based on current costs for utilizing this service.

D. State Coordinating Committee Meetings

Travel is required for five persons to attend three one-day meetings in each state. The expected composition of this committee includes two representatives each from the state optometric association and state government and one representative from one of the three colleges. Travel and per diem are estimated at $100 per person for these in-state meetings (5 persons x 3 trips x 13 states x $100 = $19,500).

E. Regional Advisory Meeting

Travel is required for one representative from each state to travel to two meetings per year. Travel and per diem are estimated at $350 per person for these out-of-state meetings (13 persons x 2 trips x $350 = $9,100).

Travel is required for the Program Director and chief administrator of each college to attend the regional advisory meeting (6 persons x 2 trips x $350 = $4,200).

Total regional advisory meeting travel: $9,100 + $4,200 = $13,300.

F. WICHE

1. Personnel

The coordination of the regional program by WICHE will require a 0.75 FTE Project Director and a full-time secretary. Other staff may participate in program-related activities, but this will be provided as in-kind services.

The Project Director will be responsible for directing the overall coordination of the program, including advisory committee meetings, program evaluation activities, WICHE-related development activities, and liaison with pertinent agencies and organizations.

The full-time secretary is required to provide support to the Project Director as well as other WICHE staff when they assist in regional program activities

2. Travel

Travel is conservatively estimated at 15 trips per year. Expected program travel includes 3 school coordinating meetings, 1 faculty development program, 39 state meetings, and 2 regional advisory meetings. Potentially, the Project Director or other WICHE staff should attend all of these. Travel is estimated at 15 out-of-state trips at $350 each. This will allow attendance at the regional and school coordinating meetings, and some of the state meetings.

3. Other

Miscellaneous office expenses include telephone and postage, $100 per month; supplies and copying, $1,700 per year; and office rent, $1,600 per year.

G. Newsletter

The common means of communicating the accomplishment of program activities to WICHE Commissioners, legislators, practitioners, appropriate state and federal employees, and the public will be a multi-paged newsletter published quarterly. This activity will be under the direction of one entity (most likely WICHE), with input from the outreach clinics and the colleges. A part-time staff writer and/or editorial resources person will be required to direct the development of the newsletter. In addition, funds will be required for printing costs.

ADDENDUM D
(Continued)

OPERATIONAL BUDGET FOR NEW REGIONAL PROGRAM COMPONENTS

OPERATIONAL BUDGET FOR NEW REGIONAL PROGRAM COMPONENTS

		Year 4		Year 5
A. Colleges of Optometry				
1. Personnel	FTE		FTE	
Program Coordinator	.50	$ 16,000	.50	$ 16,000
Secretary	.50	5,000	.50	5,000
		21,000		21,000
Fringe Benefits-15%		3,150		3,150
Total Personnel		$ 24,150		$ 24,150
2. Travel				
School coordinating meetings (2 trips x 2 persons x $350)		1,400		1,400
3. Other				
Telephone & Postage		1,200		1,200
Supplies & Copying		1,700		1,700
Total of 1, 2, & 3 for each college		$ 28,450		$ 28,450
4. Overhead				
PUCO (50% of salary & benefits)		12,075		12,075
SCCO (73.8% of salary & benefits)		17,822		17,822
UCB (34.2% of salary & benefits)		8,259		8,259
TOTAL (for all 3 colleges)		$123,506		$123,506
B. Outreach Clinics				
1. Personnel				
0.5 FTE @ 3 new sites @ $30,000		45,000		45,000
Fringe Benefits-15%		6,750		6,750
Total Personnel		51,750		51,750
2. Travel				
Faculty development program (1 trip x 13 persons x $350)		4,550		4,550
3. Overhead				
(50% of salaries & benefits)		25,875		25,875
TOTAL		$ 82,175		$ 82,175

OPERATIONAL BUDGET FOR NEW REGIONAL PROGRAM COMPONENTS
(Continued)

	Year 4	Year 5
C. Placement Network		
Self-Supporting		
D. State Coordinating Committees		
In-Kind Contribution		
E. Regional Advisory Committee		
In-Kind Contribution		
F. WICHE Administrative Costs		
In-Kind Contribution		
G. Newsletter		
In-Kind Contribution		

TOTAL OPERATIONAL COSTS (ESTIMATED)

	Year 4	Year 5
A. Colleges of Optometry	$123,506	$123,506
B. Outreach Clinics	82,175	82,175
C. Placement Network	0	0
D. State Coordinating Committees	0	0
E. Regional Advisory Committee	0	0
F. WICHE Administrative Costs	0	0
G. Newsletter	0	0
TOTAL	$205,681	$205,681

ADDENDUM D
(Continued)

COST OF OPTOMETRIC EDUCATION SURVEY AND PROJECTIONS

PROJECTION OF HISTORICAL COSTS BASED ON FINANCIAL DATA FROM FISCAL YEAR 1978-79

	Historical	Projected				
	1979	1980	1981	1982	1983	1984
Net Operating Cost per Student	$5,063	$5,428	$5,819	$6,238	$6,687	$7,168
Capital Cost Estimate (A)	$ 59	$ 59	$ 59	$ 59	$ 59	$ 59
Capital Cost Estimate (B)	$ 669	$ 723	$ 781	$ 843	$ 910	$ 983
Contributed Services Cost Estimate	$ 325	$ 348	$ 373	$ 400	$ 429	$ 460
Net Operating Cost Plus Capital Cost Estimate (A)	$5,122	$5,487	$5,878	$6,297	$6,746	$7,227
Net Operating Cost Plus Capital Cost Estimate (B)	$5,732	$6,151	$6,600	$7,081	$7,597	$8,151
Net Operating Cost Plus Capital Cost Estimate (B) Plus Contributed Services	$6,057	$6,499	$6,973	$7,481	$8,026	$8,611

COMPUTATION OF WEIGHTED AVERAGES FOR THE THREE OPTOMETRY PROGRAMS

FISCAL YEAR 1978-79

	Berkeley	Pacific	SCCO	Weighted Average*
Net Operating Cost per Student	$6,849 (6)	$4,749 (123)	$5,296 (120)	$5,063 (249)
Capital Cost Estimate (A)	$ 481 (6)	$ 45 (123)	$ 52 (120)	$ 59 (249)
Capital Cost Estimate (B)	$ 745 (6)	$ 563 (123)	$ 773 (120)	$ 669 (249)
Contributed Services Cost Estimate	--	$ 282 (123)	$ 386 (120)	$ 325 (249)
Net Operating Cost Plus Capital Cost Estimate (A)	$7,330 (6)	$4,794 (123)	$5,348 (120)	$5,122 (249)
Net Operating Cost Plus Capital Cost Estimate (B)	$7,594 (6)	$5,312 (123)	$6,069 (120)	$5,732 (249)
Net Operating Cost Plus Capital Cost Estimate (B) Plus Contributed Services	$7,594 (6)	$5,594 (123)	$6,455 (120)	$6,057 (249)

*Individual cost figures were weighted by the number of students enrolled in the WICHE Student Exchange Program (bracketed numbers).

NOTES TO COST-OF-OPTOMETRIC EDUCATION SURVEY

1. The costing procedures used in this study were developed for the WICHE Student Exchange Program and were first used on a comprehensive basis in 1976. The procedures are based on a net educational expenditures model and are similar to those used in the Institute of Medicine study (National Academy of Science, 1974). Net educational expenditures represent full operating cost per student reduced by certain revenue items, e.g., clinic revenues, Federal capitation grants. For the purposes of this survey, full costs include costs directly attributable to the professional program as well as indirect costs of supporting services.

2. The costs that were developed by these costing procedures represent average instructional costs in the sense that they do not differentiate by level of student nor do they differentiate by subspecialty in those programs where subspecialties might exist. As average costs, the figures should not be interpreted as marginal costs or incremental costs; that is, the cost of adding one more student to a program will not necessarily equal the average cost.

3. The financial information used in determining operating costs were based on the prior two years' actual expenditures, that is, those from fiscal years 1977-78 and 1978-79. Those fiscal years represented a full twelve months beginning on July 1 and concluding on June 30. In the case of 1978-79, the cost estimates were based on unaudited financial statements.

4. Each university was requested to estimate the annual capital costs of those facilities that house their optometry programs. These estimates were made in two ways: first on the historical costs of the buildings and second, on their estimated replacement costs. Replacement costs were estimated at $187/Assignable Square Foot (the cost of the recently constructed optometry building on the Berkeley campus). Estimated useful life of the buildings was assumed to be 50 years in both cases. The cost of equipment was recognized in the years in which it was purchased. An alternative calculation was also made averaging the last five years' equipment purchases (Exhibit A).

5. Each university was also requested to furnish cost estimates of contributed services from off-campus clinic sites. These estimates were based on student/faculty ratios comparable to those used in campus clinics. These cost estimates include faculty salaries, fringe benefits and a portion of support-personnel salaries, but do not include the associated overhead (Exhibits B and C).

6. Historical costs were projected for the period 1980-84 by applying standard cost indices to the data. Personnel compensation, contracted services, supplies and equipment were inflated at a rate of 7.2%--the average annual inflation factor for higher education during the past five years. (Source: Higher Education Price Index; D. Kent Halstead). The replacement cost of facilities was projected at an annual rate of 8.0%--the average annual rate of increase during the past five years. (Source: Engineering News Record; Building Cost Index).

EXHIBIT A

CAPITAL EQUIPMENT PURCHASES

University of California - Berkeley School of Optometry

	Actual Dollars	Restated Dollars (77-78)	Restated Dollars (78-79)
1973-74	$ 31,810	$ 44,645	-
1974-75	54,482	64,800	$ 69,895
1975-76	29,344	32,956	35,438
1976-77	83,692	89,450	96,477
1977-78	69,938	69,938	75,432
1978-79	107,206	-	107,206
Five-Year Average (Restated Dollars)		$ 60,358	$ 76,890

Pacific University - College of Optometry

	Actual Dollars	Restated Dollars (77-78)	Restated Dollars (78-79)
1973-74	$ 30,850	$ 43,298	-
1974-75	73,059	86,903	$ 93,727
1975-76	57,391	64,459	69,523
1976-77	120,126	128,391	138,477
1977-78	132,634	132,634	143,054
1978-79	225,091	-	225,091
Five-Year Average (Restated Dollars)		$ 91,137	$133,974

EXHIBIT A (Con't.)

CAPITAL EQUIPMENT PURCHASES

Southern California College of Optometry

	Actual Dollars	Restated Dollars (77-78)	Restated Dollars (78-79)
1973-74	$110,149	$154,596	-
1974-75	129,377	153,892	$165,982
1975-76	143,706	161,405	174,085
1976-77	166,120	177,550	191,498
1977-78	285,788	285,788	308,239
1978-79	387,618	-	387,618
Five-Year Average (Restated Dollars)		$186,646	$245,484

SOURCE: Higher Education Price Index (Equipment)
D. Kent Halstead

EXHIBIT B

Name of Institution Pacific University - College of Optometry

Contributed Educational Services

Off-Campus Clinic Sites

Fiscal Year 1979

Name of Clinic Site and Location	Number of Student-Weeks of Instruction	FTE of Contributed Faculty Service	Estimated Dollar Value of Contributed Service
Fitzsimmons Army Medical Center	168	1.00	$26,250
Colorado Optometric Center	84	.50	13,125
Tripler Army Medical Center	49	.29	7,613
Brooke Army Medical Center	42	.25	6,563
Madigan Army Medical Center	35	.21	5,513
Barnes Veterans Administration Hospital	28	.17	4,463
American Lake Veterans Administration Hospital	21	.13	3,413
Widby Island Naval Air Station	21	.13	3,413
Indian Health Service Poplar, Montana	7	.05	1,313
Private Practice Preceptorships (various locations)	140	.83	21,788
TOTALS	595	3.56	$93,454

PACIFIC
UNIVERSITY
COLLEGE OF
OPTOMETRY

August 29, 1979

James Topping
National Center for Higher
Education Management Systems
P.O. Drawer P
Boulder, Colorado 80302

Dear Jim:

Enclosed are the estimates for contributed educational services for off-campus clinic sites and the schedule of equipment purchases which you had forwarded earlier this month.

In calculating the FTE ratios, we assumed a ratio of 1 full-time faculty per 4 full-time students. Also, forty-two weeks of instruction constitute a full academic year. The mean faculty salary used in the calculations includes fringe benefits and a portion of support-personnel salary. This total reflects per student salary experience at our own clinics.

Please call if you have questions concerning the enclosed material. We look forward to seeing you in September.

Sincerely yours,

Larry

Larry R. Clausen, O.D., M.P.H.
Assistant Dean

LRC:lc
encl.

2043 COLLEGE WAY   FOREST GROVE, OREGON 97116   TELEPHONE (503) 357-6151

EXHIBIT C

Name of Institution Southern California College of Optometry
Contributed Educational Services
Off-Campus Clinic Sites
Fiscal Year 1978-79

Name of Clinic Site and Location	Number of Student-Weeks of Instruction	FTE of Contributed Faculty Service	Estimated Dollar Value of Contributed Service
LAVAOC	147	1.13	$33,020
VA-B	42	.31	9,059
IHS (2 separate clinics)	84	.63	18,409
NRMC - San Diego	42	.31	9,059
Fort Ord	42	.31	9,059
Tripler Army Medical Center	42	.31	9,059
Madigan Army Medical Center	7	.05	1,460
NAFB	42	.31	9,059
MAFB	42	.31	9,059
CHSD	21	.16	4,675
SBJH	42	.31	9,059
MCAS	42	.31	9,059
USC	35	.26	7,597
Externships	147	.40	11,688
TOTALS	777	5.11	$149,321

DEFINITIONS

Full-Time Equivalency

1.00 FTE = 4 days/week of clinical supervision over a 42 week period.

Student/Faculty Ratio of 3.9:1 used which is figure in fourth-year clinical services at Fullerton campus.

Estimated Dollar Value of Contributed Service includes faculty salary, faculty fringe benefits, and support-personnel salary.

Average faculty salary used was for the 1978-79 fiscal year.

Average fringe benefits was 15.3% of salary for 1978-79 fiscal year.

Support-personnel salary calculated using data from Fullerton campus clinic when fourth-year students are participating in clinical assignments.

EXHIBIT D

COST-OF-OPTOMETRIC EDUCATION SURVEY

INSTRUCTIONS

General Instruction: In many of the following steps, you are asked to estimate certain costs without being given specific direction on how to make the estimate. This was done intentionally so that each university would have the flexibility of adapting its own costing methodology to meet the needs of this survey. In all cases, please submit your assumptions and specific methodology that you have used in completing this survey. This will aid the staff in explaining your cost estimates should any questions arise.

STEP I: Identify the total current funds expenditures for the professional school during fiscal years 1977-78 and 1978-79. This figure should be taken directly from your institution's end-of-year accounting records. Include your current funds expenditures for equipment as part of this total.

STEP II: Exclude from the cost study all restricted funds. Restricted funds are those monies which have been restricted by the funding source for a particular purpose. Examples of restricted funds are Federal grants and contracts, other sponsored research, private gifts and donations, student financial aid.

STEP III: Exclude from the cost study all unrestricted current funds that are not directly part of, nor indirectly supportive of, the professional optometry program. The specific purpose of this step is to allocate specific portions of the instructional expenditures to instructional programs other than the professional degree program. Examples might include a two-year technician's program, graduate instruction (Master's and Ph.D. programs), post-doctoral programs, continuing education programs. Techniques for making these allocations will vary. Recommended techniques for allocating faculty salaries and supporting expenses include the use of a faculty activity survey or an analysis of faculty workload assignments.

STEP IV: Add to this figure an estimate of the cost of required courses for the professional program that are offered through other divisions or departments within the university, e.g., Basic Sciences, English, Math, etc. Generally, your Office of Institutional Research or your Budget Office should be able to provide you with these cost per credit hour estimates. These cost estimates should include only the state's (or institution's) share of funds which support these other divisions or departments.

STEP V: In many professional programs, a clinical or internship program is required of each student in order for that student to complete the degree requirements. In many instances, that internship or clinical experience is offered either off campus or through another department or division of the university. Examples might include the student's educational experience in a teaching hospital, an agricultural experiment station, a diagnostic lab, a pharmaceutical lab, a summer internship, a fifth-year internship or a series of clinical affiliations required for professional certification. To the best of your ability, estimate the state's or institution's subsidy of this clinical or internship experience. Do not duplicate any expenditures that you have already included in STEP I.

STEP VI: Add to this figure an estimate of the total indirect costs provided to the professional program by other support divisions or departments within the university. Examples of supporting services that may be included, if applicable, are libraries and museums, audio-visual services, computing support, student services, student admissions and records, general administrative services, and physical plant operations and maintenance. Individual estimates can be made for each of these supporting services based on the professional program's enrollments or budget in relationship to the university's total enrollments or total budget. Again only the state's (or institution's) share of these indirect costs should be included in this calculation.

STEP VII: Subtotal the amounts entered in STEPS I-VI. Divide by the number of full-time students enrolled in the professional program. No specific definition for full-time student is provided. However, it is generally interpreted to mean a student who is carrying a full class load and can be expected to finish the degree requirements during the specified duration of your degree program. If you allow part-time students to enroll in your program, you will need to convert the part-time enrollments to full-time enrollments based upon your definition of a full class load. The resulting figure then represents the full operating cost per full-time student enrolled in the professional program.

STEP VIII: Subtract from the full operating cost figure all unrestricted revenues produced by the professional program except for State appropriations, student tuition and fees, and WICHE support fees. Unrestricted revenues are those monies which do not have specific restrictions placed on them by the funding source as to how they may be spent. Please indicate the amounts of your Federal Capitation grant and clinic revenues as separate line items.

STEP IX: Subtotal the amounts entered in STEPS VII and VIII. Divide by the number of full-time students enrolled in the professional program. This will yield the net operating cost per full-time student enrolled in the professional program.

STEP X: Subtract the amount of tuition charged a WICHE student. Private institutions should subtract the agreed upon reduced charge (one-third of the standard tuition charge). The remaining cost figure should approximate the operating cost to the State (or private institution) of educating a student enrolled in the professional program under the auspices of the WICHE Student Exchange Program.

STEP XI: Add the per-student net capital cost figure, on the replacement value basis, from the separate capital cost schedule. The resultant final figure should approximate the combined operating and capital cost to the state (or private institution) of educating a student enrolled in the professional program under the auspices of the WICHE Student Exchange Program.

Methodology for Separate Capital Cost Estimate

Capital cost estimates for buildings should be based on the concept of an annual use charge to the sending states rather than a long-term commitment to the bricks and mortar of a particular receiving institution. We are asking you to base your estimates on both historical costs and replacement costs. Please use the separate worksheet to set forth your estimates:

a. Identify the number of assignable square feet used by the professional program.

b. Estimate the historical cost per square foot of the building(s) which house the professional program. This estimate should be based on the original construction cost, including built-in equipment, plus any major repairs or renovations that were made to the building(s) subsequent to its construction.

c. Estimate the replacement cost per square foot of the building(s) which house the professional program. Replacement cost should be interpreted as the cost of replacing your present facility in terms of current dollars.

d. Estimate the percentage of historical cost in (b) which was funded by state (or institutional) funds as opposed to federal funds. Record this percentage both in the historical cost column and in the replacement cost column.

e. Multiply items (b) and (c) by the percentage in (d). This should then give the state's (or institution's) share of the estimated construction costs of the building spaces used by the professional program.

f. If the state's (or institution's) share of the cost of the building spaces was funded by borrowing, show the net amount of the interest paid or to be paid on this borrowing, in the historical cost column.

(Net out any offsetting interest earned on the temporary investment of the borrowed funds.) In the replacement cost column you may show a projected net interest cost of the borrowing necessary to fund the replacement of the existing facilities. Do not duplicate any cost already reflected in items (b) and (c).

g. Add items (e) and (f). This should then give the state's (or institution's) share of the estimated construction costs and associated interest costs of the building spaces used by the professional program.

h. Multiply (g) by 2% in both columns. This procedure translates the dollar costs of item (g) into an annualized cost based on an assumed fifty-year life for the buildings. All buildings currently in use, even though more than fifty years old, should be kept in the calculation.

i. This is the annual cost of the state-funded (or institution-funded) portions of the facilities.

j. Enter the number of full-time professional students in both columns. This number should be the same as that used in STEPS VII and IX of the main schedule.

k. Divide (i) by (j). These figures then represent the annual per-student cost to the state (or institution) for the building facilities used by the professional program, alternatively on the historical cost basis or the replacement cost basis. Carry the replacement cost figure to STEP XI on the main costing schedule.

October 1, 1979

D-30

PACIFIC UNIVERSITY
COST-OF-OPTOMETRIC EDUCATION SURVEY
FISCAL YEAR 1978-79

STEP	DESCRIPTION	TOTAL DOLLARS	FULL-TIME STUDENTS	$ PER FULL-TIME STUDENT
I	Total Current Funds Expenditures: Fiscal Year 1978-79	$ 1,583,643		
II	Exclude Restricted Funds for Specific Services, e.g., Research, Patient Care, etc.	- -		
III	Exclude Current Funds that Support Other Instructional Programs	- -		
IV	Add: Cost of Instructional Services Offered Through Other Divisions or Departments of the University (State Funded Portion Only)	+ -		
V	Add: State or Institution's Subsidy of Internship or Clinical Experience (Do Not Duplicate Dollars Included in Step I)	+ -		
VI	Add: Cost of Supporting Services Provided by Other Divisions or Departments of the University (State-Funded Portion Only)	+ 692,860		
VII	SUBTOTAL - Full Operating Cost	$ 2,276,503	331	$ 6,878
VIII	Less: Revenues Produced by the Professional Program			
	a. Federal Capitation Grants, FY78-79	- 130,007		
	b. Clinic Revenues	- 529,132		
	c. Other Revenues	- 45,600		
IX	SUBTOTAL - Net Operating Cost	$ 1,571,764	331	$ 4,749
X	Less: Tuition Charged a WICHE Student			-
	Net Operating Cost to State (or Institution)			$
XI	Add: Net Capital Cost of Facilities Attributed to Professional Program - Estimated Net Replacement Cost per Full-Time Professional Student From Capital Cost Schedule			+
	Net Operating and Capital Cost to State (or Institution)			$

Institution Pacific University Program College of Optometry

Person compiling information to whom questions can be addressed:

Name Dr. Larry Clausen

Title Assistant Dean Phone

WORKSHEET
CAPITAL COST ESTIMATE
FISCAL YEAR 1978-79

	HISTORICAL COST ESTIMATE	REPLACEMENT COST ESTIMATE
a. Number of Assignable Square Feet (ASF) (a) 49,808		
b. Historical Cost of Buildings per ASF $ 20.67 x (a) 49,808 =	(b) 1,029,531	
c. Replacement Cost of Buildings per ASF $ 187** x (a) 49,808 =		(c) 9,314,096
d. Percentage of Historical Cost Funded by State (or Institutional) Funds as Opposed to Federal Grants.	.675%	100%
e. Net Capital Cost for Buildings -- Multiply (b) and (c) by percentage in (d)	$ 695,000	$ 9,314,096
f. Net Interest Cost to State (or Institution) If Any, for Funding of the Construction of the Facilities Used by the Professional Program	$ 46,000	$ -
g. Net Capital Cost Plus Interest Cost for Buildings - Add (e) and (f)	$ 741,000	$ 9,314,096
h. Multiply (g) by 2%	x .02	x .02
i. Annual Net Capital Cost for Buildings	$ 14,820	186,282
j. Number of Full-Time Professional Students	331	331
k. Net Capital Cost Per Full-Time Professional Student Divide (i) by (j)	$ 45	$ 563 *

*Carry this figure to Step XI on main schedule.

Institution Pacific University Program College of Optometry

**Replacement cost estimate was based on the recently constructed Berkeley optometry building (completed during 1978-79 at a cost of $187/ASF).

PACIFIC UNIVERSITY
COST-OF-OPTOMETRIC EDUCATION SURVEY
FISCAL YEAR 1977-78

STEP	DESCRIPTION	TOTAL DOLLARS	FULL-TIME STUDENTS	$ PER FULL-TIME STUDENT
I	Total Current Funds Expenditures: Fiscal Year 1977-78	$ 1,298,211		
II	Exclude Restricted Funds for Specific Services, e.g., Research, Patient Care, etc.	- -		
III	Exclude Current Funds that Support Other Instructional Programs	- -		
IV	Add: Cost of Instructional Services Offered Through Other Divisions or Departments of the University (State Funded Portion Only).	+ -		
V	Add: State or Institution's Subsidy of Internship or Clinical Experience (Do not Duplicate Dollars Included in Step I)	+ -		
VI	Add: Cost of Supporting Services Provided by Other Divisions of Departments of the University (State-Funded Portion Only) 1978-79 Budget Estimate	+ 639,847		
VII	SUBTOTAL - Full Operating Cost	$ 1,938,058	332	$ 5,838
VIII	Less: Revenues Produced by the Professional Program			
	a. Federal Capitation Grants, FY77-78	- 100,130		
	b. Clinic Revenues	- 394,668		
	c. Other Revenues	- -		
IX	SUBTOTAL - Net Operating Cost	$ 1,443,260	332	$ 4,347
X	Less: Tuition Charged a WICHE Student			-
	Net Operating Cost to State (or Institution)			$
XI	Add: Net Capital Cost of Facilities Attributed to Professional Program - Estimated Net Replacement Cost per Full-Time Professional Student From Capital Cost Schedule			+
	Net Operating and Capital Cost to State (or Institution)			$

Institution Pacific University Program College of Optometry

Person compiling information to whom questions can be addressed: Name Dr. Larry Clausen

Title Assistant Dean Phone

WORKSHEET
CAPITAL COST ESTIMATE
FISCAL YEAR 1977-78

	HISTORICAL COST ESTIMATE	REPLACEMENT COST ESTIMATE
a. Number of Assignable Square Feet (ASF) (a) 49,808		
b. Historical Cost of Buildings per ASF $ 20.67 x (a) 49,808 =	(b) 1,029,531	
c. Replacement Cost of Buildings per ASF $ 172 x (a) 49,808 =		(c) 8,566,976
d. Percentage of Historical Cost Funded by State (or Institutional) Funds as Opposed to Federal Grants.	.675%	100%
e. Net Capital Cost for Buildings -- Multiply (b) and (c) by percentage in (d)	$ 695,000	$ 8,566,976
f. Net Interest Cost to State (or Institution) If Any, for Funding of the Construction of the Facilities Used by the Professional Program	$ 46,000	$ -
g. Net Capital Cost Plus Interest Cost for Buildings - Add (e) and (f)	$ 741,000	$ 8,566,976
h. Multiply (g) by 2%	x .02	x .02
i. Annual Net Capital Cost for Buildings	$ 14,820	171,340
j. Number of Full-Time Professional Students	332	332
k. Net Capital Cost Per Full-Time Professional Student Divide (i) by (j)	$ 45	$ 516 *

* Carry this figure to Step XI on main schedule.

Institution Pacific University Program College of Optometry

PACIFIC UNIVERSITY
COST-OF-OPTOMETRIC EDUCATION SURVEY
FISCAL YEAR 1977-78

Line 1: Current funds expenditures of $1,298,211 includes capital equipment expenditures of $132,974.

Line 2: Research grants have been excluded in Line 1, but Clinic Instruction grants of $106,549 are included.

Line 3: Continuing Education is funded through a separate account and therefore has been excluded in Line 1 total.

Line 4: Optometry students do take a few courses as electives in the College of Arts and Sciences. An estimate will be made for those costs if they are significant in number (greater than 5% of total courseload).

Line 5: Cost of Clinic Instruction included in Line 1:

Forest Grove Clinic	$238,744
Portland Clinic	157,663
Total	$396,407

Line 6: Indirect costs distributed among the Colleges of Arts and Sciences, Music and Optometry based on student credit hours and total expenditures.

Line 7: FTE student figures are from the registrar's Fall report.

Line 8: Clinic Revenues:

Forest Grove Clinic	$259,464
Portland Clinic	135,204
Total	$394,668*

*Includes $230,944 of resale items.

Line 11: Original Building was constructed in 1952 with an addition in 1966. Replacement cost estimates was based on the recently constructed Berkeley optometry building (completed during 1978-79 at a cost of $187/ASF) reduced by a building cost inflation factor of 8.3% (Engineering News Record).

October 1, 1979
D-35

UNIVERSITY OF CALIFORNIA - BERKELEY
COST-OF-OPTOMETRIC EDUCATION SURVEY
FISCAL YEAR 1978-79

STEP	DESCRIPTION	TOTAL DOLLARS	FULL-TIME STUDENTS	$ PER FULL-TIME STUDENT
I	Total Current Funds Expenditures: Fiscal Year 1978-79	$ 2,765,354		
II	Exclude Restricted Funds for Specific Services, e.g., Research, Patient Care, etc.	- 741,335		
III	Exclude Current Funds that Support Other Instructional Programs	- 150,000		
IV	Add: Cost of Instructional Services Offered Through Other Divisions or Departments of the University (State Funded Portion Only)	+ 267,900		
V	Add: State or Institution's Subsidy of Internship or Clinical Experience (Do Not Duplicate Dollars Included in Step I)	+ -		
VI	Add: Cost of Supporting Services Provided by Other Divisions or Departments of the University (State-Funded Portion Only)	+ 603,149		
VII	SUBTOTAL - Full Operating Cost	$ 2,745,068	261	$ 10,518
VIII	Less: Revenues Produced by the Professional Program			
	a. Federal Capitation Grants, FY78-79	- 110,042		
	b. Clinic Revenues	- 847,457		
	c. Other Revenues	-		
IX	SUBTOTAL - Net Operating Cost	$ 1,787,569	261	$ 6,849
X	Less: Tuition Charged a WICHE Student			-
	Net Operating Cost to State (or Institution)			$
XI	Add: Net Capital Cost of Facilities Attributed to Professional Program - Estimated Net Replacement Cost per Full-Time Professional Student From Capital Cost Schedule			+
	Net Operating and Capital Cost to State (or Institution)			$

Institution University of California Program School of Optometry

Person compiling information to whom questions can be addressed:

Name Donald E. Henker

Title Assistant to the Dean Phone (415) 642-2219

WORKSHEET
CAPITAL COST ESTIMATE
FISCAL YEAR 1978-79

	HISTORICAL COST ESTIMATE	REPLACEMENT COST ESTIMATE
a. Number of Assignable Square Feet (ASF) (a) 52,000		
b. Historical Cost of Buildings per ASF $ 31 x (a) 22,000 = + 187 (b) 30,000	(b) 6,283,248	
c. Replacement Cost of Buildings per ASF $ 187 x (a) 52,000 =		(c) 9,724,000
d. Percentage of Historical Cost Funded by State (or Institutional) Funds as Opposed to Federal Grants.	100%	100%
e. Net Capital Cost for Buildings -- Multiply (b) and (c) by percentage in (d)	$ 6,283,248	$ 9,724,000
f. Net Interest Cost to State (or Institution) If Any, for Funding of the Construction of the Facilities Used by the Professional Program	$	$
g. Net Capital Cost Plus Interest Cost for Buildings - Add (e) and (f)	$ 6,283,248	$ 9,724,000
h. Multiply (g) by 2%	x .02	x .02
i. Annual Net Capital Cost for Buildings	$ 125,665	194,480
j. Number of Full-Time Professional Students	261	261
k. Net Capital Cost Per Full-Time Professional Student Divide (i) by (j)	$ 481	$ 745 *

*Carry this figure to Step XI on main schedule.

Institution University of California Program School of Optometry

**Replacement cost estimate was based on construction cost for recently completed optometry building (1978-79).

UNIVERSITY OF CALIFORNIA - BERKELEY
NOTES TO COST-OF-OPTOMETRIC EDUCATION SURVEY
FISCAL YEAR 1978-79

Line 1: Total Expenditures of $2,765,354 includes capital equipment expenditures of $107,206.

Line 2: The following restricted funds have been excluded from the calculation:

Federal Research Grants	$602,530
Non-Federal Research Grants	32,938
Federal Teaching & Training Grants	105,417
Non-Federal Teaching & Training Grants	450
Total	$741,335

Line 3: Cost of Graduate Instruction estimated at $150,000 (15 students @ $10,000 each).

Line 4: 1900 SCH @ $141 each = $267,900.

Line 5: All Clinic Expenditures are included in Line 1. No additional funding for off-campus clinics.

Line 6:

General Administration (Allocation based on Total Expenditures)	$137,978
Student Services (Allocation based on Headcount Students)	145,282
Operation and Maintenance (Allocation on Gross Building Area)	189,867
Libraries (Allocation based on Headcount Students)	130,022
Total	$603,149

Line 7: FTE students calculated on Fall Term enrollments. Full operation cost may be overstated by about $75,000 for Supplies and Services to make new building ready for operation.

Line 8(b):

Clinic Revenue	$574,179
Resale Ophthalmic Items (included in expenditures - Line 1)	273,278
Total	$847,457

Line 11: Old Building was constructed in 1940-41 at a total cost of $683,248. Contains 22,000 Assignable Square Feet at a unit cost of approximately $31/ASF.

New Building was constructed in 1978-79 at a

total cost of (all State Funds)	$5,600,000
plus renovations	179,000
Total Project Cost	$5,779,000

Contains 30,000 Assignable Square Feet at a unit cost of approximately $187/ASF.

July 1, 1979
D-39

UNIVERSITY OF CALIFORNIA - BERKELEY
COST-OF-OPTOMETRIC EDUCATION SURVEY
FISCAL YEAR 1977-78

STEP	DESCRIPTION	TOTAL DOLLARS	FULL-TIME STUDENTS	$ PER FULL-TIME STUDENT
I	Total Current Funds Expenditures: Fiscal Year 1977-78	$ 2,149,519		
II	Exclude Restricted Funds for Specific Services, e.g., Research, Patient Care, etc.	- 535,886		
III	Exclude Current Funds that Support Other Instructional Programs	- 150,000		
IV	Add: Cost of Instructional Services Offered Through Other Divisions or Departments of the University (State Funded Portion Only).	+ 225,000		
V	Add: State or Institution's Subsidy of Internship or Clinical Experience (Do not Duplicate Dollars Included in Step I)	+ -		
VI	Add: Cost of Supporting Services Provided by Other Divisions of Departments of the University (State-Funded Portion Only)	+ 395,000		
VII	SUBTOTAL - Full Operating Cost	$ 2,083,633	261	$ 7,983
VIII	Less: Revenues Produced by the Professional Program			
	a. Federal Capitation Grants, FY77-78	- 45,188		
	b. Clinic Revenue	- 648,706		
	c. Other Revenues	-		
IX	SUBTOTAL - Net Operating Cost	$ 1,389,739	261	$ 5,325
X	Less: Tuition Charged a WICHE Student			-
	Net Operating Cost to State (or Institution)			$
XI	Add: Net Capital Cost of Facilities Attributed to Professional Program - Estimated Net Replacement Cost per Full-Time Professional Student From Capital Cost Schedule			+
	Net Operating and Capital Cost to State (or Institution)			$

Institution University of California Program School of Optometry

Person compiling information to whom questions can be addressed: Name Donald E. Henker

Title Assistant to the Dean Phone (415) 642-2219

WORKSHEET
CAPITAL COST ESTIMATE
FISCAL YEAR 1977-78

	HISTORICAL COST ESTIMATE	REPLACEMENT COST ESTIMATE
a. Number of Assignable Square Feet (ASF) (a) 22,000		
b. Historical Cost of Buildings per ASF $ 31 x (a) 22,000 =	(b) 683,248	
c. Replacement Cost of Buildings per ASF $ 172 x (a) 22,000 =		(c) 3,784,000
d. Percentage of Historical Cost Funded by State (or Institutional) Funds as Opposed to Federal Grants.	100%	100%
e. Net Capital Cost for Buildings -- Multiply (b) and (c) by percentage in (d)	$ 683,248	$ 3,784,000
f. Net Interest Cost to State (or Institution) If Any, for Funding of the Construction of the Facilities Used by the Professional Program	$ -	$ -
g. Net Capital Cost Plus Interest Cost for Buildings - Add (e) and (f)	$ 683,248	$ 3,784,000
h. Multiply (g) by 2%	x .02	x .02
i. Annual Net Capital Cost for Buildings	$ 13,665	75,680
j. Number of Full-Time Professional Students	261	261
k. Net Capital Cost Per Full-Time Professional Student Divide (i) by (j)	$ 52	$ 290 *

* Carry this figure to Step XI on main schedule.

Institution University of California Program School of Optometry

** Based on construction cost for new building (1978-79)

UNIVERSITY OF CALIFORNIA - BERKELEY
NOTES TO COST-OF-OPTOMETRIC EDUCATION SURVEY
FISCAL YEAR 1977-78

Line 1: Total Expenditures of $2,149,519 includes capital equipment expenditures of $69,938.

Line 2: The following restricted funds have been excluded from the calculation:

Federal Research Grants	$458,442
Non-Federal Research Grants	25,686
Federal Teaching & Training Grants	49,762
Non-Federal Teaching & Training Grants	1,996
Total	$535,886

Line 3: Cost of Graduate Instruction estimated at $150,000 (15 students @ $10,000 each).

Line 4: 1600 SCH @ $141 each = $225,000.

Line 5: All Clinic Expenditures are included in Line 1. No additional funding for off-campus clinics.

Line 6:

General Administration (Allocation based on Total Expenditures)	$150,000
Student Services (Allocation based on Headcount Students)	110,000
Operation and Maintenance (Allocation on Gross Building Area)	50,000
Libraries (Allocation based on Headcount Students)	85,000
Total	$395,000

Line 7: FTE students calculated on Fall Term enrollments.

Line 8(b):

Clinic Revenue	$412,209
Resale Ophthalmic Items (included in expenditures - Line 1)	236,497
Total	$648,706

Line 11: Old Building was constructed in 1940-41 at a total cost of $683,248. Contains 22,000 Assignable Square Feet at a unit cost of approximately $31/ASF.

New Building was constructed in 1978-79 at a

total cost of (all State Funds)	$5,600,000
plus renovations	179,000
Total Project Cost	$5,779,000

Contains 30,000 Assignable Square Feet at a unit cost of approximately $187/ASF. This figure was reduced by a building cost inflation factor of 8.3% to reflect the appropriate replacement cost for 1977-78. (Engineering News Record)

October 1, 1979

D-43

SOUTHERN CALIFORNIA COLLEGE OF OPTOMETRY
COST-OF-OPTOMETRIC EDUCATION SURVEY
FISCAL YEAR 1978-79

STEP	DESCRIPTION	TOTAL DOLLARS	FULL-TIME STUDENTS	$ PER FULL-TIME STUDENT
I	Total Current Funds Expenditures: Fiscal Year 1978-79	$ 3,159,516		
II	Exclude Restricted Funds for Specific Services, e.g., Research, Patient Care, etc.	- 8,250		
III	Exclude Current Funds that Support Other Instructional Programs (a) (b)	- 52,410 - 52,441		
IV	Add: Cost of Instructional Services Offered Through Other Divisions or Departments of the University (State Funded Portion Only)	+ -		
V	Add: State or Institution's Subsidy of Internship or Clinical Experience (Do Not Duplicate Dollars Included in Step I)	+ -		
VI	Add: Cost of Supporting Services Provided by Other Divisions or Departments of the University (State-Funded Portion Only)	+ -		
VII	SUBTOTAL - Full Operating Cost	$ 3,046,415	387	$ 7,872
VIII	Less: Revenues Produced by the Professional Program			
	a. Federal Capitation Grants, FY78-79	- 112,304		
	b. Clinic Revenues	- 768,812		
	c. Bookstore Revenue	- 59,275		
	d. Other Revenues	- 56,579		
IX	SUBTOTAL - Net Operating Cost	$ 2,049,445	387	$ 5,296
X	Less: Tuition Charged a WICHE Student			-
	Net Operating Cost to State (or Institution)			$
XI	Add: Net Capital Cost of Facilities Attributed to Professional Program - Estimated Net Replacement Cost per Full-Time Professional Student From Capital Cost Schedule			+
	Net Operating and Capital Cost to State (or Institution)			$

Institution Southern Calif. College of Optometry Program Optometry

Person compiling information to whom questions can be addressed: Name Robert A. Baird

Title Comptroller Phone (714) 870-7226

WORKSHEET
CAPITAL COST ESTIMATE
FISCAL YEAR 1978-79

OPTOMETRIC CENTER, FULLERTON	HISTORICAL COST ESTIMATE	REPLACEMENT COST ESTIMATE
a. Number of Assignable Square Feet (ASF) (a) 72,526		
b. Historical Cost of Buildings per ASF $ 37.76 x (a) 72,526 =	(b) 2,738,523	
c. Replacement Cost of Buildings per ASF $ 187.00 x (a) 72,526 =		(c) 13,562,362
d. Percentage of Historical Cost Funded by State (or Institutional) Funds as Opposed to Federal Grants.	33.3%	100%
e. Net Capital Cost for Buildings -- Multiply (b) and (c) by percentage in (d)	$ 912,841	$ 13,562,362
f. Net Interest Cost to State (or Institution) If Any, for Funding of the Construction of the Facilities Used by the Professional Program	$ -	$ -
g. Net Capital Cost Plus Interest Cost for Buildings - Add (e) and (f)	$ 912,841	$ 13,562,362
h. Multiply (g) by 2%	x .02	x .02
i. Annual Net Capital Cost for Buildings	$ 18,256	271,247
j. Number of Full-Time Professional Students	387	387
k. Net Capital Cost Per Full-Time Professional Student Divide (i) by (j)	$ 47	$ 701 *

*Carry this figure to Step XI on main schedule.

Institution Southern Calif. College of Optometry Program Optometry

WORKSHEET
CAPITAL COST ESTIMATE
FISCAL YEAR 1978-79

OPTOMETRIC CENTER, LOS ANGELES	HISTORICAL COST ESTIMATE	REPLACEMENT COST ESTIMATE
a. Number of Assignable Square Feet (ASF) (a) 7,500		
b. Historical Cost of Buildings per ASF $ 32.30 x (a) 7,500 =	(b) 242,216	
c. Replacement Cost of Buildings per ASF $ 187.00 x (a) 7,500 =		(c) 1,402,500
d. Percentage of Historical Cost Funded by State (or Institutional) Funds as Opposed to Federal Grants.	39.7%	100%
e. Net Capital Cost for Buildings -- Multiply (b) and (c) by percentage in (d)	$ 96,160	$ 1,402,500
f. Net Interest Cost to State (or Institution) If Any, for Funding of the Construction of the Facilities Used by the Professional Program	$ 9,148	$ -
g. Net Capital Cost Plus Interest Cost for Buildings - Add (e) and (f)	$ 105,308	$ 1,402,500
h. Multiply (g) by 2%	x .02	x .02
i. Annual Net Capital Cost for Buildings	$ 2,106	28,050
j. Number of Full-Time Professional Students	387	387
k. Net Capital Cost Per Full-Time Professional Student Divide (i) by (j)	$ 5	$ 72 *

*Carry this figure to Step XI on main schedule.

Institution Southern Calif. College of Optometry Program Optometry

SOUTHERN CALIFORNIA COLLEGE OF OPTOMETRY
NOTES TO COST-OF-OPTOMETRIC EDUCATION SURVEY
FISCAL YEAR 1978-79

Line 1: Total Expenditures of $3,159,516 includes capital equipment expenditures of $387,618.

Line 2: Research grants totaling $8,250 were excluded. The balance ($369,718) represented grants in support of Clinic Instruction and therefore were not excluded at this point in the calculation.

Line 3(a): This figure represents the direct cost of SCCO's Continuing Education program. The C. E. program generated $96,143 in revenue in 1978-79.

(b): The Technician program is supported by a separate grant of $52,441.

Line 7: FTE students were reported as of the October 1 census date.

Line 8(b):	Total Clinic Revenue	$1,495,424
	Less: Cost of Resale Items	572,912
	Less: Revenue from Technician Program	153,700
	Net Clinic Revenue	$ 768,812
(c):	Total Bookstore Revenue	$ 278,721
	Less: Cost of Resale Items	219,446
	Net Bookstore Revenue	$ 59,275
(d)	Other Revenues include:	
	Discounts Earned	$ 35,289
	Xerox Income	3,960
	Homecoming	4,256
	State Boards	3,000
	Vending Income	-
	Royalties	663
	Miscellaneous	9,411
	Total	$ 56,579

Line 11: Two capital cost worksheets have been submitted. One represents the Los Angeles Optometric Clinic and the other represents the Fullerton Optometric Clinic and the main campus. Historical cost estimates have been provided; replacement cost estimates were based on $187/ASF.

July 1, 1979
D-47

SOUTHERN CALIFORNIA COLLEGE OF OPTOMETRY
COST-OF-OPTOMETRIC EDUCATION SURVEY
FISCAL YEAR 1977-78

STEP	DESCRIPTION	TOTAL DOLLARS	FULL-TIME STUDENTS	$ PER FULL-TIME STUDENT
I	Total Current Funds Expenditures: Fiscal Year 1977-78	$ 2,849,253		
II	Exclude Restricted Funds for Specific Services, e.g., Research, Patient Care, etc.	- -		
III	Exclude Current Funds that Support Other Instructional Programs (a)	- 105,332		
	(b)	- 107,294		
IV	Add: Cost of Instructional Services Offered Through Other Divisions or Departments of the University (State Funded Portion Only).	+ -		
V	Add: State or Institution's Subsidy of Internship or Clinical Experience (Do not Duplicate Dollars Included in Step I)	+ -		
VI	Add: Cost of Supporting Services Provided by Other Divisions of Departments of the University (State-Funded Portion Only)	+ -		
VII	SUBTOTAL - Full Operating Cost	$ 2,636,627	398	$ 6,625
VIII	Less: Revenues Produced by the Professional Program			
	a. Federal Capitation Grants, FY77-78	- 146,512		
	b. Clinic Revenue	- 587,908		
	c. Bookstore Revenue	- 53,801		
	d. Other Revenues	- 48,865		
IX	SUBTOTAL - Net Operating Cost	$ 1,799,541	398	$ 4,521
X	Less: Tuition Charged a WICHE Student			-
	Net Operating Cost to State (or Institution)			$
XI	Add: Net Capital Cost of Facilities Attributed to Professional Program - Estimated Net Replacement Cost per Full-Time Professional Student From Capital Cost Schedule			+
	Net Operating and Capital Cost to State (or Institution)			$

Institution Southern Calif. College of Optometry Program Optometry

Person compiling information to whom questions can be addressed:

Name Robert A. Baird

Title Comptroller Phone (714) 870-7226

WORKSHEET
CAPITAL COST ESTIMATE
FISCAL YEAR 1977-78

OPTOMETRIC CENTER, FULLERTON	HISTORICAL COST ESTIMATE	REPLACEMENT COST ESTIMATE
a. Number of Assignable Square Feet (ASF) (a) 72,526		
b. Historical Cost of Buildings per ASF $ 37.76 x (a) 72,526 =	(b) 2,738,523	
c. Replacement Cost of Buildings per ASF $ 172.00 x (a) 72,526 =		(c) 12,474,472
d. Percentage of Historical Cost Funded by State (or Institutional) Funds as Opposed to Federal Grants.	33.3%	100%
e. Net Capital Cost for Buildings -- Multiply (b) and (c) by percentage in (d)	$ 912,841	$ 12,474,472
f. Net Interest Cost to State (or Institution) If Any, for Funding of the Construction of the Facilities Used by the Professional Program	$ -	$ -
g. Net Capital Cost Plus Interest Cost for Buildings - Add (e) and (f)	$ 912,841	$ 12,474,472
h. Multiply (g) by 2%	x .02	x .02
i. Annual Net Capital Cost for Buildings	$ 18,256	249,489
j. Number of Full-Time Professional Students	398	398
k. Net Capital Cost Per Full-Time Professional Student Divide (i) by (j)	$ 46	$ 627 *

* Carry this figure to Step XI on main schedule.

Institution Southern California College of Optometry Program Optometry

D-49

WORKSHEET
CAPITAL COST ESTIMATE
FISCAL YEAR 1977-78

OPTOMETRIC CENTER, LOS ANGELES	HISTORICAL COST ESTIMATE	REPLACEMENT COST ESTIMATE
a. Number of Assignable Square Feet (ASF) (a) 7,500		
b. Historical Cost of Buildings per ASF $ 32.30 x (a) 7,500 =	(b) 242,216	
c. Replacement Cost of Buildings per ASF $ 172.00 x (a) 7,500 =		(c) 1,290,000
d. Percentage of Historical Cost Funded by State (or Institutional) Funds as Opposed to Federal Grants. (Record same percentage in both columns).	39.7%	100%
e. Net Capital Cost for Buildings -- Multiply (b) and (c) by percentage in (d)	$ 96,160	$ 1,290,000
f. Net Interest Cost to State (or Institution) If Any, for Funding of the Construction of the Facilities Used by the Professional Program	$ 9,148	$ -
g. Net Capital Cost Plus Interest Cost for Buildings - Add (e) and (f)	$ 105,308	$ 1,290,000
h. Multiply (g) by 2%	x .02	x .02
i. Annual Net Capital Cost for Buildings	$ 2,106	25,800
j. Number of Full-Time Professional Students	398	398
k. Net Capital Cost Per Full-Time Professional Student Divide (i) by (j)	$ 5	$ 65 *

* Carry this figure to Step XI on main schedule.

Institution Southern California College of Optometry

Program Optometry

SOUTHERN CALIFORNIA COLLEGE OF OPTOMETRY
NOTES TO COST-OF-OPTOMETRIC EDUCATION SURVEY
FISCAL YEAR 1977-78

Line 1: Total Expenditures of $2,849,253 includes capital equipment expenditures of $285,788.

Line 2: The following restricted funds included in Line 1 support Clinic Instruction and therefore were not excluded at this point in the calculation:

Veterans Admin. Clinic	$113,744
Baldwin Park (Federal)	103,068
Financial Aid (Work Study)	19,939
California Rehabilitation	17,632
Baldwin Park (County)	12,283
Sherman Indian Clinic	11,581
Pacific State Hospital	7,800
Lions Club Low Vision	7,356
Title VI	6,535
Other Grants	4,139
Total	$304,077

Line 3(a): This figure represents the direct cost of SCCO's Continuing Education program. The C.E. program generated $186,691 in revenue in 1977-78.

(b): The Technician program is supported by a separate grant of $107,294.

Line 7: FTE students were reported as of the October 1 census date.

Line 8(b):

Total Clinic Revenue	$1,261,721
Less: Cost of Resale Items	599,113
Less: Revenue from Technician Program	74,700
Net Clinic Revenue	$ 587,908

(c)

Total Bookstore Revenue	$ 243,120
Less: Cost of Resale Items	189,319
Net Bookstore Revenue	$ 53,801

(d) Other Revenues include:

Discounts Earned	$ 27,011
Xerox Income	5,749
Homecoming	5,521
State Boards	3,000
Vending Income	1,225
Royalties	693
Miscellaneous	5,666
Total	$ 48,865

Line 11: Two capital cost worksheets have been submitted. One represents the Los Angeles Optometric Clinic and the other represents the Fullerton Optometric Clinic and the main campus. Historical cost estimates have been provided; replacement cost estimates were based on $172/ASF. This figure was derived by discounting the cost of the recently constructed Berkeley optometry building ($187/ASF) by a factor of 8.3% (Engineering News Record).

P. O. Drawer P, Boulder, Colorado 80302 • (303) 492-8666

WICHE
Western Interstate Commission for Higher Education
affirmative action/equal opportunity employer

D-52

September 20, 1979

MEMORANDUM

TO: Presidents, Deans, or Department Chairmen of Programs Cooperating as Receiving Programs in the WICHE Professional Student Exchange Program

FROM: William R. McConnell, Director W. R. McConnell
Student Exchange Program

The WICHE Commission has directed the staff to conduct a cost-of-education survey of all receiving programs in the Professional Student Exchange Program, based on actual data for the 1978-79 fiscal year. This is a request that you arrange for the completion of the survey by the appropriate officer in your institution. We are asking that the completed forms be returned to us by DECEMBER 15, 1979.

The previous survey of this kind was done in the spring of 1976, based on 1974-75 data. The results have been used by the WICHE Commission as a basis for the setting of student exchange support fees for the fiscal years 1977-78 through 1980-81. The results of the current survey, in terms of average net per-student cost for each exchange field in 1978-79, will be projected forward and used as a basis for the setting of support fees for 1981-82 and 1982-83. This action will be taken at the Commission's June 1980 meeting. You will be given an opportunity to comment on the staff's report to the Commission prior to that meeting.

Enclosed are the survey forms, a set of instructions, and a memo directed to the person who will do the work. If completed forms for your program were received in the 1976 survey, a copy is included.

Thank you for your help in this survey.

On another matter, WICHE will have a new telephone system and new telephone numbers as of October 1. Please call the following new numbers to the attention of appropriate individuals in your organization:

WICHE General Information	(303) 497-0200
Sandy Lefkowitz, Staff Associate Professional Student Exchange Program	(303) 497-0214
William R. McConnell, Director Student Exchange Program	(303) 497-0210
Gloria Jimenez, Staff Associate Student Exchange Program	(303) 497-0213

WRM/ld

D-53

September 20, 1979

WICHE PROFESSIONAL STUDENT EXCHANGE PROGRAM
COST-OF-EDUCATION SURVEY
FISCAL YEAR 1978-79

STEP	DESCRIPTION	TOTAL DOLLARS	FULL-TIME STUDENTS	$ PER FULL-TIME STUDENT
I	Total Current Funds Expenditures: Fiscal Year 1978-79	$ ______		
II	Exclude Restricted Funds for Specific Services, e.g., Research, Patient Care, etc.	- ______		
III	Exclude Current Funds that Support Other Instructional Programs	- ______		
IV	Add: Cost of Instructional Services Offered Through Other Divisions or Departments of the University (State Funded Portion Only).	+ ______		
V	Add: State or Institution's Subsidy of Internship or Clinical Experience (Do not Duplicate Dollars Included in Step I)	+ ______		
VI	Add: Cost of Supporting Services Provided by Other Divisions or Departments of the University (State-Funded Portion Only)	+ ______		
VII	SUBTOTAL - Full Operating Cost	$ ______	______	$ ______
VIII	Less: Revenues Produced by the Professional Program			
	Federal Capitation Grants, FY1978-79	- ______		
	Other Revenues ______	- ______		
	______	- ______		
IX	SUBTOTAL - Net Operating Cost	$ ______	______	$ ______
X	Less: Tuition Charged a WICHE Student			- ______
	Net Operating Cost to State (or Institution)			$ ______
XI	Add: Net Capital Cost of Facilities Attributed to Professional Program - Estimated Net Replacement Cost per Full-Time Professional Student From Capital Cost Schedule			+ ______
	Net Operating and Capital Cost to State (or Institution)			$ ______

Institution ______ Program ______

Person compiling information to whom questions can be addressed: Name ______

Title ______ Phone ______

September 20, 1979

WORKSHEET
CAPITAL COST ESTIMATE
FISCAL YEAR 1978-79

	HISTORICAL COST ESTIMATE	REPLACEMENT COST ESTIMATE
a. Number of Assignable Square Feet (ASF) (a)____________		
b. Historical Cost of Buildings per ASF $____________ x (a)____________ =	(b)____________	
c. Replacement Cost of Buildings per ASF $____________ x (a)____________ =		(c)____________
d. Percentage of Historical Cost Funded by State (or Institutional) Funds as Opposed to Federal Grants. (Record same percentage in both columns).	____________	____________
e. Net Capital Cost for Buildings -- Multiply (b) and (c) by percentage in (d)	$____________	$____________
f. Net Interest Cost to State (or Institution) If Any, for Funding of the Construction of the Facilities Used by the Professional Program	$____________	$____________
g. Net Capital Cost Plus Interest Cost for Buildings - Add (e) and (f)	$____________	$____________
h. Multiply (g) by 2%	x .02	x .02
i. Annual Net Capital Cost for Buildings	$____________	____________
j. Number of Full-Time Professional Students	____________	____________
k. Net Capital Cost Per Full-Time Professional Student Divide (i) by (j)	$____________	$____________ *

* Carry this figure to Step XI on main schedule.

Institution________________________ Program________________________

WICHE PROFESSIONAL STUDENT EXCHANGE PROGRAM

COST-OF-EDUCATION SURVEY

SUPPLEMENTARY INFORMATION

Information about 1979-80

1. On the basis of your operating budget for 1979-80 and any other pertinent information you have, what is your best estimate of the percentage increase between 1978-79 and 1979-80 in dollar amount of net operating cost. (STEP IX, first column on the cost survey form).

________% increase

2. STEPS VII and IX of the cost survey form show a figure for full-time students in 1978-79. What is the comparable figure for 1979-80?

	1978-79	1979-80
Full-time students		

3. STEP X of the cost survey form shows a 1978-79 tuition figure. What is the comparable figure for 1979-80?

	1978-79	1979-80
STEP X, Tuition Figure		

4. If applicable, what is the amount of federal capitation funds being received from the federal FY79 appropriation. You should receive notice of this amount about October 1, 1979.

Federal capitation funds received from federal FY 79: $____________

Institution: ____________________________ Program: ____________________

WICHE PROFESSIONAL STUDENT EXCHANGE PROGRAM

COST-OF-EDUCATION SURVEY

SUPPLEMENTARY INFORMATION

Information about 1979-80

1. On the basis of your operating budget for 1979-80 and any other pertinent information you have, what is your best estimate of the percentage increase between 1978-79 and 1979-80 in dollar amount of net operating cost. (STEP IX, first column on the cost survey form).

__________% increase

2. STEPS VII and IX of the cost survey form show a figure for full-time students in 1978-79. What is the comparable figure for 1979-80?

	1978-79	1979-80
Full-time students		

3. STEP X of the cost survey form shows a 1978-79 tuition figure. What is the comparable figure for 1979-80?

	1978-79	1979-80
STEP X, Tuition Figure		

4. If applicable, what is the amount of federal capitation funds being received from the federal FY79 appropriation. You should receive notice of this amount about October 1, 1979.

Federal capitation funds received from federal FY 79: $____________

Institution: __________________________ Program: ____________________

September 20, 1979

WICHE PROFESSIONAL STUDENT EXCHANGE PROGRAM
COST-OF-EDUCATION SURVEY
ASSUMPTIONS

1. The costing procedures are based on a Net Educational Expenditures Model similar to the one developed in the INSTITUTE OF MEDICINE (IOM) STUDY (National Academy of Sciences, 1974). Net educational expenditures describe the unfunded portion of educational costs. In the case of this WICHE PSEP cost survey, we want you first to calculate the full operating cost per student enrolled in the professional program and then reduce that figure by nonstate funding sources, e.g., patient care revenues, federal capitation grants and student tuition. For the purposes of this survey, full costs are to include costs directly attributable to the professional program and indirect costs of supporting services. As a final step, an estimate of net capital costs for the facilities used by the program is added to the operating cost figure.

2. The costs that are developed by these costing procedures will represent average instructional costs in the sense that they will not differentiate by level of student nor will they differentiate by subspeciality in those programs where subspecialities might exist.

3. The financial information used in determining operating costs should be based on last year's actual expenditures, that is, those from fiscal year 1978-79. These will be adjusted for such changes as inflation when they are used to establish PSEP support fee rates for 1981-82 and 1982-83. We are requesting certain information about 1979-80 as an aid in making such adjustments.

4. A school should base its cost estimates on the full fiscal year (12 months) to the extent that its professional curriculum is based on a 12-month period. If a school's professional curriculum is geared toward a 9-month academic year and if the school incurs costs during the summer months that are unrelated to the professional curriculum, then clearly these additional costs should be excluded from the cost study.

5. Provision has been made to allow each school to estimate the annual capital costs to the state (or institution) of those facilities that house the professional program. These estimates should be made in two ways: First on the historical costs of the buildings and second on their estimated replacement costs. Estimated useful life of the buildings is assumed to be fifty years. The cost of equipment is to be recognized in the year in which it is purchased. Therefore, we ask that you include your annual current funds expenditures for equipment in STEP I on the assumption that these expenditures represent the normal cost for replacement of existing equipment.

6. The costing procedures and formats for calculating costs are generalized to the extent that they can be applied to all fifteen fields currently administered by the Professional Student Exchange Program.

7. At the present time, the WICHE Commission is committed to a uniform support fee for each professional field offered through the PSEP. These costing procedures will establish for each professional program a cost figure that is unique to the college or university offering that particular program. Cost figures derived by the individual schools will be used to calculate a weighted average per-student cost for each field which in turn will be used to establish a fee for each field that will apply uniformly to all PSEP students in that field, regardless of the receiving program they attend or the state from which they come.

8. Present WICHE Commission policy requires that this cost-of-education survey be conducted every two years.

September 20, 1979

WICHE PROFESSIONAL STUDENT EXCHANGE PROGRAM
COST-OF-EDUCATION SURVEY
METHODOLOGY

General Instruction: In many of the following steps, you are asked to estimate certain costs without being given specific direction on how to make the estimate. This was done intentionally so that each school would have the flexibility of adapting its own costing methodology to meet the needs of this survey. In all cases, please submit your assumptions and specific methodology that you have used in completing this survey. This will aid the staff in seeking a reasonable level of consistency among the programs.

STEP I: Identify the total current funds expenditures for the professional school during fiscal year 1978-79. This figure should be taken directly from your institution's end-of-the-year accounting records. Include your current funds expenditures for equipment as part of this total.

STEP II: Exclude from the cost study all expenditures from restricted funds. Restricted funds are those monies which have been restricted by the funding source for a particular purpose. Examples of restricted funds are grants and contract from federal, state and private sources for research, other specific projects, student financial aid, etc.

STEP III: Exclude from the cost study all expenditures of unrestricted current funds that are not directly part of, nor indirectly supportive of, the professional program offered through the Professional Student Exchange Program. The specific purpose of this step is to allocate specific portions of the instructional expenditures to instructional programs other than the professional degree program. Examples might include a two-year technician's program, graduate instruction provided by a professional school (Master's and Ph.D. programs), post-doctoral programs, continuing education program. Techniques for making these allocations will vary. Recommended techniques for allocating faculty salaries and supporting expenses include the use of a faculty activity survey or an analysis of faculty workload assignments. Another (but less accurate) way of allocating the instructional budget is on the basis of credit hours produced. This latter method assumes that all credit hours are equally costly to produce.

STEP IV: Add an estimate of the cost of required courses for the professional program that are offered through other divisions or departments within the university, e.g., Basic Sciences, English, Math, etc. Generally, your Office of Institutional Research or your Budget Office should be able to provide you with these cost per credit hour estimates. These cost estimates should include only the state's (or institution's) share of funds which support these other divisions or departments.

NOTE: Those institutions that have a great deal of interaction among disciplines should consider the possibility of building an induced course load matrix (ICLM) to aid them in completing STEPS III and IV.

STEP V: In many professional programs, a clinical or internship program is required of each student in order for that student to complete the degree requirements. In many instances, that internship or clinical experience is offered either off campus or through another department or division of the university. Examples might include the student's educational experience in a teaching hospital, an agricultural experiment station, a diagnostic lab, a pharmaceutical lab, a summer internship, a fifth-year internship or a series of clinical affiliations required for professional certification. To the best of your ability, estimate the state's or institution's subsidy, if any, of this clinical or internship experience. Do not duplicate any expenditures that you have already included in STEP I.

STEP VI: Add an estimate of the total indirect costs of services provided to the professional program by other support divisions or departments within the university. Examples of supporting services that may be included, if applicable, are libraries and museums, audiovisual services, computing support, student services, student admissions and records, general administrative services, and physical plant operations and maintenance. Individual estimates can be made for each of these supporting services based on the professional program's enrollments or budget in relationship to the university's total enrollments or total budget. Again only the state's (or institution's) share of these indirect costs should be included in this calculation.

NOTE: Departmental indirect costs should have been included in the cost study as part of STEP I.

STEP VII: Subtotal the amounts entered in STEPS I-VI. Divide by the number of full-time students enrolled in the professional program. No specific definition for full-time student is provided. However, it is generally interpreted to mean a student who is carrying a full class load and can be expected to finish the degree requirements during the specified duration of your degree program. If you allow part-time students to enroll in your program, you will need to convert the part-time enrollments to full-time equivalents based upon your definition of a full class load. The resulting figure then represents the full operating cost per full-time student enrolled in the professional program.

STEP VIII: Subtract from the full operating cost figure all unrestricted revenues produced by the professional program except for state appropriations, student tuition and fees, and WICHE support fees. Unrestricted revenues are those monies which do not have specific restrictions placed on them by the funding source as to how they may be spent. If you receive federal capitation funds, the amount received in 1978-79 should be shown on the line provided. Examples of other unrestricted revenues would include income from clinic operations, income from sale of educational services, etc.

STEP IX: Subtract the amounts shown in STEP VIII from the subtotal in STEP VII. Divide by the number of full-time students enrolled in the professional program. This will yield the net operating cost per full-time student enrolled in the professional program.

STEP X: Subtract the amount of tuition charged a WICHE student in 1978-79. For a public institution this should be the resident tuition figure. For a private institution, it should be one-third of regular tuition regardless of the amount actually paid out-of-pocket by the student. The remaining cost figure should approximate the net operating cost to the state (or private institution) of educating a student enrolled in the professional program under the auspices of the WICHE Professional Student Exchange Program.

STEP XI: Add the per-student net capital cost figure, on the replacement value basis, from the separate capital cost schedule. The resultant final figure should approximate the combined net operating and capital cost to the state (or private institution) of educating a student enrolled in the professional program under the auspices of the WICHE Professional Student Exchange Program.

Methodology for separate Capital Cost Estimate

Capital cost estimates for buildings should be based on the concept of an annual use charge to the sending states rather than a long-term commitment to the bricks and mortar of a particular receiving institution. We are asking you to make estimates on both an historical cost basis and a replacement cost basis. Please use the separate worksheet to set forth your estimates:

a. Identify the number of assignable square feet used by the professional program.

b. Estimate the historical cost per square foot of the building(s) which house the professional program. This estimate should be based on the original construction cost, including built-in equipment, plus any major repairs or renovations that were made to the building(s) subsequent to its construction. Multiply this square foot cost by the number of square feet identified in (a).

c. Estimate the replacement cost per square foot of the building(s) which house the professional program. Replacement cost should be interpreted as the cost of replacing your present facility in terms of current dollars. Multiply the square foot cost by the number of square feet identified in (a).

d. Estimate the percentage of historical cost in (b) which was funded by state (or institutional) funds as opposed to federal funds. Record this percentage both in the historical cost column and in the replacement cost column.

e. Multiply items (b) and (c) by the percentage in (d). This should then give the state's (or institution's) share of the estimated construction costs of the building spaces used by the professional program.

f. If the state's (or institution's) share of the cost of the building spaces was funded by borrowing, show the net amount of the interest paid or to be paid on this borrowing, in the historical cost column. (Net out any offsetting interest earned on the temporary investment of the borrowed funds.) In the replacement cost column you may show a projected net interest cost of the borrowing necessary to fund the replacement of the existing facilities. Do not duplicate any cost already reflected in items (b) and (c).

g. Add items (e) and (f). This should then give the state's (or institution's) share of the estimated construction costs and associated interest costs of the building spaces used by the professional program.

h. Multiply (g) by 2% in both columns. This procedure translates the dollar costs of item (g) into an annualized cost based on an assumed fifty-year life for the building. All buildings currently in use, even though more than fifty years old, should be kept in the calculation.

i. This is the annual cost of the state-funded (or institution-funded) portions of the facilities.

j. Enter the number of full-time professional students in both columns. This number should be the same as that used in STEPS VII and IX of the main schedule.

k. Divide (i) by (j). These figures then represent the annual per-student cost to the state (or institution) for the building facilities used by the professional program, alternatively on the historical cost basis or the replacement cost basis. Carry the replacement cost figure to STEP XI on the main costing schedule.

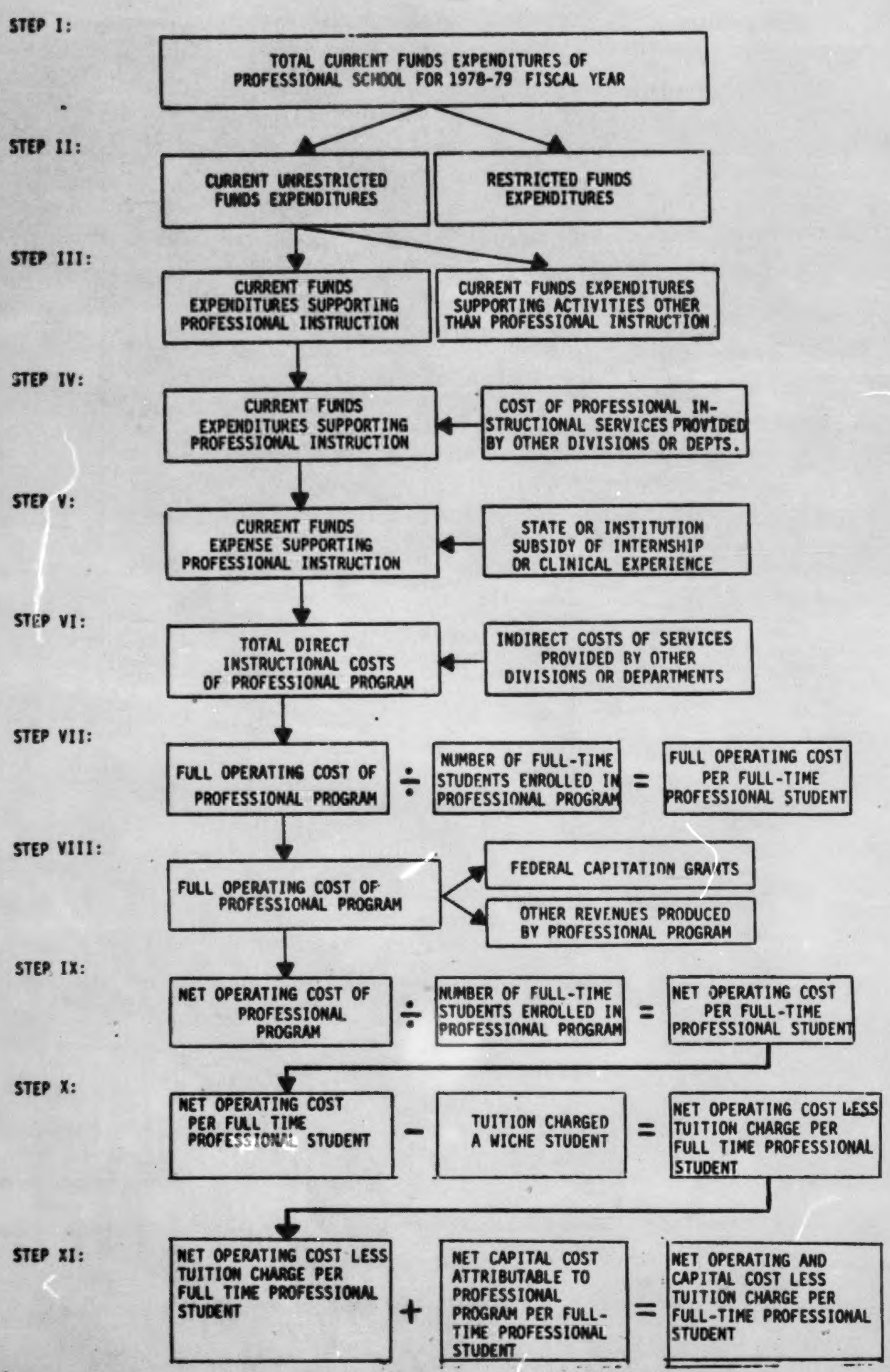
Request for Information about 1979-80

A separate form requests four items of information about 1979-80, to assist us in projecting forward from 1978-79 costs to 1981-82 and 1982-83, the years for which PSEP support fees are to be set, by the WICHE Commission in June 1980. The form is self explanatory.

September 20, 1979

WICHE PROFESSIONAL STUDENT EXCHANGE PROGRAM

COST-OF-EDUCATION SURVEY


STEP I:
TOTAL CURRENT FUNDS EXPENDITURES OF PROFESSIONAL SCHOOL FOR 1978-79 FISCAL YEAR
STEP II:
CURRENT UNRESTRICTED FUNDS EXPENDITURES
RESTRICTED FUNDS EXPENDITURES
STEP III:
CURRENT FUNDS EXPENDITURES SUPPORTING PROFESSIONAL INSTRUCTION
CURRENT FUNDS EXPENDITURES SUPPORTING ACTIVITIES OTHER THAN PROFESSIONAL INSTRUCTION
STEP IV:
CURRENT FUNDS EXPENDITURES SUPPORTING PROFESSIONAL INSTRUCTION
COST OF PROFESSIONAL INSTRUCTIONAL SERVICES PROVIDED BY OTHER DIVISIONS OR DEPTS.
STEP V:
CURRENT FUNDS EXPENSE SUPPORTING PROFESSIONAL INSTRUCTION
STATE OR INSTITUTION SUBSIDY OF INTERNSHIP OR CLINICAL EXPERIENCE
STEP VI:
TOTAL DIRECT INSTRUCTIONAL COSTS OF PROFESSIONAL PROGRAM
INDIRECT COSTS OF SERVICES PROVIDED BY OTHER DIVISIONS OR DEPARTMENTS
STEP VII:
FULL OPERATING COST OF PROFESSIONAL PROGRAM
÷
NUMBER OF FULL-TIME STUDENTS ENROLLED IN PROFESSIONAL PROGRAM
=
FULL OPERATING COST PER FULL-TIME PROFESSIONAL STUDENT
STEP VIII:
FULL OPERATING COST OF PROFESSIONAL PROGRAM
FEDERAL CAPITATION GRANTS
OTHER REVENUES PRODUCED BY PROFESSIONAL PROGRAM
STEP IX:
NET OPERATING COST OF PROFESSIONAL PROGRAM
÷
NUMBER OF FULL-TIME STUDENTS ENROLLED IN PROFESSIONAL PROGRAM
=
NET OPERATING COST PER FULL-TIME PROFESSIONAL STUDENT
STEP X:
NET OPERATING COST PER FULL TIME PROFESSIONAL STUDENT
−
TUITION CHARGED A WICHE STUDENT
=
NET OPERATING COST LESS TUITION CHARGE PER FULL TIME PROFESSIONAL STUDENT
STEP XI:
NET OPERATING COST LESS TUITION CHARGE PER FULL TIME PROFESSIONAL STUDENT
+
NET CAPITAL COST ATTRIBUTABLE TO PROFESSIONAL PROGRAM PER FULL-TIME PROFESSIONAL STUDENT
=
NET OPERATING AND CAPITAL COST LESS TUITION CHARGE PER FULL-TIME PROFESSIONAL STUDENT

September 20, 1979

EXAMPLE

WICHE PROFESSIONAL STUDENT EXCHANGE PROGRAM
COST-OF-EDUCATION SURVEY
FISCAL YEAR 1978-79

STEP	DESCRIPTION	TOTAL DOLLARS	FULL-TIME STUDENTS	$ PER FULL-TIME STUDENT
I	Total Current Funds Expenditures: Fiscal Year 1978-79	$ 6,000,000		
II	Exclude Restricted Funds for Specific Services, e.g., Research, Patient Care, etc.	- 2,400,000		
III	Exclude Current Funds that Support Other Instructional Programs	- 300,000		
IV	Add: Cost of Instructional Services Offered Through Other Divisions or Departments of the University (State Funded Portion Only).	+ 600,000		
V	Add: State or Institution's Subsidy of Internship or Clinical Experience (Do not Duplicate Dollars Included in Step I)	+ 800,000		
VI	Add: Cost of Supporting Services Provided by Other Divisions or Departments of the University (State-Funded Portion Only)	+ 1,500,000		
VII	SUBTOTAL - Full Operating Cost	$ 6,200,000	1200	$ 5,167
VIII	Less: Revenues Produced by the Professional Program			
	Federal Capitation Grants, FY 1978-79	- 2,040,000		
	Other Revenues --Clinic Fees	- 160,000		
	--Application Fees	- 16,000		
IX	SUBTOTAL - Net Operating Cost	$ 3,984,000	1200	$ 3,320
X	Less: Tuition Charged a WICHE Student			- 1,200
	Net Operating Cost to State (or Institution)			$ 2,120
XI	Add: Net Capital Cost of Facilities Attributed to Professional Program - Estimated Net Replacement Cost per Full-Time Professional Student From Capital Cost Schedule			+ 193
	Net Operating and Capital Cost to State (or Institution)			$ 2,313

Institution University of Western America Program Health

Person compiling information to whom questions can be addressed: Name John L. Johnson

Title Director of Analytical Studies Phone (703) 502-6671

. . . . **EXAMPLE**

WORKSHEET
CAPITAL COST ESTIMATE
FISCAL YEAR 1978-79

	HISTORICAL COST ESTIMATE	REPLACEMENT COST ESTIMATE
a. Number of Assignable Square Feet (ASF) (a) 214,300		
b. Historical Cost of Buildings per ASF $ 32 x (a) 214,300 =	(b) 6,857,000	
c. Replacement Cost of Buildings per ASF $ 54 x (a) 214,300 =		(c) 11,572,000
d. Percentage of Historical Cost Funded by State (or Institutional) Funds as Opposed to Federal Grants. (Record same percentage in both columns).	70%	70%
e. Net Capital Cost for Buildings -- Multiply (b) and (c) by percentage in (d)	$ 4,800,000	$ 8,100,000
f. Net Interest Cost to State (or Institution) If Any, for Funding of the Construction of the Facilities Used by the Professional Program	$ 1,600,000	$ 3,500,000
g. Net Capital Cost Plus Interest Cost for Buildings - Add (e) and (f)	$ 6,400,000	$ 11,600,000
h. Multiply (g) by 2% .	x .02	x .02
i. Annual Net Capital Cost for Buildings	$ 128,000	232,000
j. Number of Full-Time Professional Students	1,200	1,200
k. Net Capital Cost Per Full-Time Professional Student Divide (i) by (j)	$ 107	$ 193 *

* Carry this figure to Step XI on main schedule.

Institution University of Western America Program Health

Example

WICHE PROFESSIONAL STUDENT EXCHANGE PROGRAM

COST-OF-EDUCATION SURVEY

SUPPLEMENTARY INFORMATION

Information about 1979-80

1. On the basis of your operating budget for 1979-80 and any other pertinent information you have, what is your best estimate of the percentage increase between 1978-79 and 1979-80 in dollar amount of net operating cost. (STEP IX, first column on the cost survey form).

8 % increase

2. STEPS VII and IX of the cost survey form show a figure for full-time students in 1978-79. What is the comparable figure for 1979-80?

	1978-79	1979-80
Full-time students	$1,200	$1,224

3. STEP X of the cost survey form shows a 1978-79 tuition figure. What is the comparable figure for 1979-80?

	1978-79	1979-80
STEP X, Tuition Figure	$1,200	1,310

4. If applicable, what is the amount of federal capitation funds being received from the federal FY79 appropriation. You should receive notice of this amount about October 1, 1979.

Federal capitation funds received from federal FY 79: $ 1,500,000

Institution: University of Western America Program: Health

VISION MANPOWER NEEDS
IN THE
WESTERN STATES

June 28, 1979

Staff

Susan D. Klein, Ph.D.

William R. McConnell, Ed.D.

Allen H. Nelson, Ph.D.

Contract No. HRA 232-78-0130

Sponsor

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Health Resources Administration
Division of Allied Health Professions
Room 9-22, Center Building
3700 East-West Highway
Hyattsville, Maryland 20782

* * * *

Western Interstate Commission for Higher Education
P.O. Drawer P
Boulder, Colorado 80302

TABLE OF CONTENTS

PREFACE v

ADVISORY COMMITTEE MEMBERS vi

LIST OF TABLES AND FIGURES vii

LIST OF ABBREVIATIONS x

EXECUTIVE SUMMARY xi

INTRODUCTION 1

Chapter I, THE CHANGING PRACTICE OF OPTOMETRY 5

Chapter II, THE NEED AND DEMAND FOR VISION CARE IN THE REGION . . . 15

Chapter III, THE CURRENT SUPPLY OF VISION CARE MANPOWER IN THE REGION 33

Chapter IV, ENTRIES TO AND EXITS FROM THE MANPOWER POOL 47

Chapter V, MANPOWER PROJECTION METHODOLOGY 67

Chapter VI, STATE MANPOWER SUMMARIES 85

APPENDIX A 129

BIBLIOGRAPHY 159

PREFACE

This report by the Western Interstate Commission for Higher Education is an initial step in developing a plan to meet the future optometric manpower needs of the thirteen western states. Any such plan requires a credible determination of both the current situation and future requirements in the affected states. This report presents those determinations and sets the stage to devise an education plan that will successfully meet the region's future vision care needs.

WICHE will be developing a draft of such a regional education plan and seeking commentary on it during the next few months with a final plan ready early in 1980.

As a regional bridge between those who fund professional education and those who provide that education, WICHE is an excellent mechanism by which to examine issues that are fraught with controversy, divided opinion, and special interest.

WICHE's objectivity and independence allows it to avoid alignment with any particular viewpoint in this area. Instead, it presents a balanced assessment of the optometric field in order to assist educators, health administrators and planners, state officials, professional organizations, and others to make sound decisions concerning the future course of a vital health care area.

These policy makers are aware that diminishing public resources for education compound the problem of adequately meeting patient needs. That goal can be achieved, however, if there is effective utilization of available resources and steps are taken to avoid proliferation of costly and duplicating programs.

This report was prepared under the direction of Susan D. Klein, Coordinator of WICHE's Regional Optometric Education Project.

Boulder, Colorado
June 1979

Phillip Sirotkin
Executive Director
Western Interstate Commission
for Higher Education

337

ADVISORY COMMITTEE MEMBERS

Jesse C. Beasley
Practicing Optometrist
Member, California Board of Optometry

Tadao Beppu
Deputy Director for Administration
Hawaii Department of Health

Emile J. Bernard, Jr.
Practicing Optometrist, Louisiana
Chairman, Council on Optometric Education

James Boucher
Practicing Optometrist
Wyoming

John H. Carr
State Health Officer
Nevada Division of Health

Mardoqueo Chacon
Chairman, Board of New Mexico Health Systems Agency

Ron G. Fair
Practicing Optometrist
Colorado

David Grover
Higher Education Specialist
California Postsecondary Education Commission

Senator Glenn Hackney
Alaska State Senate
WICHE Commissioner

Albert N. Lemoine
Chairman, Department of Ophthalmology
University of Kansas

Edith Maddron
Oregon Educational Coordinating Commission

Ira Moscovice
Health Services Research Center
University of Washington

Richard Neibaur
Director, Wyoming Health Systems Agency

Kristin Paulson
Principal Health Planner
Colorado Department of Health

William B. Phillips
Academic Planning Coordinator
Arizona Board of Regents

Donna Shepard
Senior Fiscal Analyst
Legislative Fiscal Office, Idaho

Lee W. Smith
Executive Director, Association of Schools and Colleges of Optometry
Washington, D.C.

Robert K. Thomas
Academic Vice President
Brigham Young University

William J. Tietz
President, Montana State University

Robert C. Vander Meer
Practicing Optometrist
Secretary, New Mexico Board of Examiners

Treasure Ann Wheeler
Practicing Optometrist
President Elect, Oregon Optometric Association

Ex-Officio Members:

Willard B. Bleything, Dean
Pacific University
College of Optometry

Merton C. Flom, Professor
University of California, Berkeley
School of Optometry

Richard L. Hopping, President
Southern California College of Optometry

The members of the Project's Advisory Committee were helpful in providing data, reviewing the work plan, suggesting issues to be addressed, and critiquing a draft of this manpower report.

LIST OF TABLES AND FIGURES

Table Number Page

1.1 SELECTED CHARACTERISTICS OF OPTOMETRY LICENSURE IN THE WICHE REGION 8

2.1 PREVALENCE RATES FOR MEDICAL HISTORY FINDINGS PERTAINING TO THE EYE AMONG POPULATION BY AGE IN THE WESTERN REGION, UNITED STATES, 1971-72 17

2.2 PERCENTAGE OF POPULATION WITH 20/50 VISION OR LESS AND PROPORTION WHOSE VISION COULD BE IMPROVED BY PROPER REFRACTION, UNITED STATES, 1971-72. 18

2.3 PERCENT OF POPULATION WITH 20/50 VISION OR LESS BY REGION, AND PROPORTION OF THOSE WHOSE VISION COULD BE IMPROVED WITH PROPER REFRACTION, UNITED STATES, 1971-72 20

2.4 INCIDENCE OF BLINDNESS BY AGE IN UNITED STATES, 1970 AND ESTIMATED INCIDENCE IN WICHE REGION, 1978 . . . 22

2.5 PREVALENCE OF CAUSES OF BLINDNESS, UNITED STATES, 1970 AND ESTIMATED FREQUENCY IN WICHE REGION, 1978 . . . 23

2.6 PROJECTED INCREASES IN OPTOMETRIC NEEDS BETWEEN 1980 AND 2000 DUE TO CHANGES IN POPULATION SIZE AND AGE FOR WICHE STATES 25

2.7 UTILIZATION--PERCENT OF PERSONS THREE YEARS AND OVER HAVING OR NEVER HAVING AN EYE EXAMINATION ACCORDING TO SELECTED CHARACTERISTICS: UNITED STATES, BASED ON DATA COLLECTED IN HEALTH INTERVIEWS IN 1973 . . 26

2.8 PERCENT DISTRIBUTION OF PERSONS THREE YEARS OF AGE AND OVER WITH CORRECTIVE LENSES BY TYPE OF LENS, ACCORDING TO AGE AND SEX, UNITED STATES, 1971 . . . 28

3.1 SUPPLY OF OPTOMETRISTS IN WICHE REGION 35

3.2 COMPARISONS OF RATIOS OF OPTOMETRISTS AND AMA LISTED OPHTHALMOLOGISTS FOR WICHE STATES 37

3.3 COMPARISON OF RATIOS OF OPTOMETRISTS AND BOARD CERTIFIED OPHTHALMOLOGISTS FOR WICHE STATES 38

3.4 COMPARISON OF AGE DISTRIBUTION OF 1973 ACTIVE OPTOMETRIST SUPPLY WITH ESTIMATED AGE DISTRIBUTION OF 1978 ACTIVE OPTOMETRIST SUPPLY BY STATE AND PERCENT 41

Table Number Page

3.5 COMPARISON OF MINORITY OPTOMETRISTS IN 1973 WITH PERCENTAGE OF MINORITIES IN POPULATION OF REGION . . 44

3.6 COMPARISON OF MINORITY OPTOMETRISTS IN 1973 WITH PERCENTAGE OF MINORITIES IN CALIFORNIA POPULATION . 45

4.1 SCHOOLS AND COLLEGES OF OPTOMETRY IN THE UNITED STATES AND ENROLLMENTS AS OF 1978-79 48

4.2 TRENDS IN GEOGRAPHICAL LOCATIONS WHERE WICHE STUDENTS ATTEND OPTOMETRY SCHOOL. 50

4.3 FIRST YEAR WICHE STATES OPTOMETRY STUDENT ENROLLMENTS, 1977-78 51

4.4 FOUR YEAR WICHE STATES OPTOMETRY STUDENT ENROLLMENTS, 1977-78 52

4.5 PERCENTAGE FEMALE ENROLLMENT IN WICHE OPTOMETRY SCHOOLS, 1977-78 54

4.6 COMPARISON OF MINORITY ENROLLMENT IN WICHE SCHOOLS OF OPTOMETRY WITH PERCENTAGE ACTIVE MINORITY OPTOMETRISTS IN WICHE REGION (1973) AND PERCENTAGE MINORITY IN WICHE POPULATION 55

4.7 COMPARISON OF MINORITY ENROLLMENT IN CALIFORNIA OPTOMETRY SCHOOLS WITH PERCENTAGE OF MINORITIES IN STATE OF CALIFORNIA POPULATION 56

4.8 COMPARISON OF U.S. ENROLLMENTS OF FEMALES AND MINORITIES BETWEEN SCHOOLS OF OPTOMETRY, DENTISTRY, AND MEDICINE 57

4.9 EDUCATIONAL OPPORTUNITY: RATIOS OF WICHE STUDENTS ENROLLED IN U.S. OPTOMETRY SCHOOLS TO POPULATION AND TO BACHELORS DEGREES GRANTED BY HOME STATE 59

4.10 COMPARISON OF WICHE PROFESSIONAL STUDENT EXCHANGE PROGRAM (PSEP) OPTOMETRY STUDENT ENROLLMENTS WITH TOTAL OPTOMETRY STUDENT ENROLLMENTS FROM WICHE STATES . . 60

4.11 STUDENT RETURN RATES ESTIMATED FROM PACIFIC UNIVERSITY COLLEGE OF OPTOMETRY AND SOUTHERN CALIFORNIA COLLEGE OF OPTOMETRY ALUMNI DATA 62

4.12 PERCENT DISTRIBUTION OF O.D. SUPPLY BY HIGH SCHOOL LOCATION FOR THREE WICHE STATES 64

5.1 PROJECTIONS OF ACTIVE OPTOMETRISTS TO YEAR 2000 FOR CALIFORNIA UNDER ZERO MIGRATION 73

Table Number Page

5.2 PROJECTIONS OF ACTIVE OPTOMETRISTS TO YEAR 2000 FOR CALIFORNIA UNDER TREND MIGRATION 74

5.3 COMPARISON OF TREND BASED ESTIMATES OF STUDENT RETURNS AND IN-MIGRATION WITH OBSERVED FOR CALIFORNIA . . 78

5.4 PROJECTIONS OF OPTOMETRIST RATIOS TO YEAR 2000 UNDER RECENT ENROLLMENT TRENDS WITH DIFFERING MIGRATION AND RETURN RATE ASSUMPTIONS. 79

5.5 NUMBERS OF STUDENTS NEEDED PER YEAR BY WICHE STATES UNDER DIFFERENT MIGRATION AND STUDENT RETURN ASSUMPTIONS. 80

Figure Number

2.1 FEDERAL PROGRAMS WHICH CAN AFFECT OPTOMETRY 30

3.1 DISTRIBUTION OF OPTOMETRISTS AND BOARD CERTIFIED OPHTHALMOLOGISTS BY COUNTY FOR THE WESTERN REGION. . 40

3.2 AGE DISTRIBUTIONS OF OPTOMETRISTS, 1973 and 1978 . . 42

5.1 SIMPLE PROJECTION MODEL USED FOR AGGREGATED NATIONAL PROJECTIONS. 68

5.2 EXPANDED PROJECTION MODEL TO INCLUDE EFFECTS OF MIGRATION AND GRADUATE RELOCATION 69

5.3 CONDENSED PROJECTION MODEL USED FOR PROJECTIONS WITH OVERALL ESTIMATE OF NET MIGRATION 71

LIST OF ABBREVIATIONS

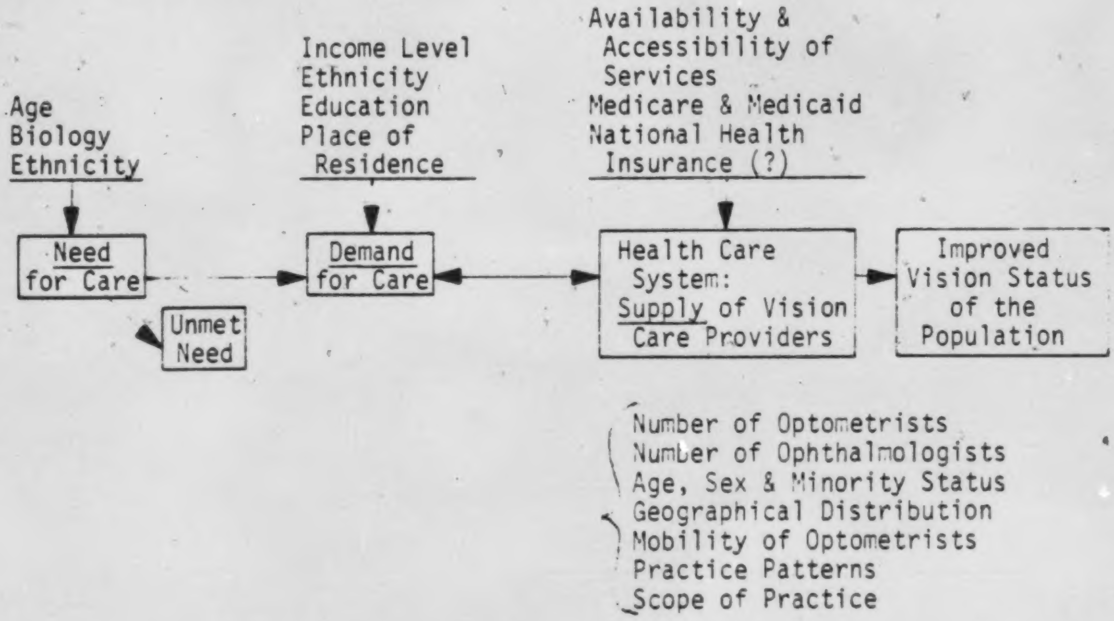
M.D.	ophthalmologist
O.D.	optometrist
PSEP	Professional Student Exchange Program
WICHE	Western Interstate Commission for Higher Education

EXECUTIVE SUMMARY

This manpower report has been written to satisfy, in part, a contract designed to develop a regional program for optometric education in the western United States. The regional plan will provide adequate training opportunities for residents in the western states, as well as help to direct graduates into underserved areas in the region.

The report contains a compilation and assessment of existing optometric manpower supply data for the thirteen western states. By provision of this contract, no primary data were collected. Available data sources used include: The Bureau of Health Manpower and the National Center for Health Statistics (DHEW), the American Optometric Association, state optometric associations, the colleges of optometry and the Western Interstate Commission for Higher Education. This report provides the best possible estimates or projections of the supply of optometric manpower for each state in the West from 1980 to the year 2000. It contains the student enrollment levels projected to be necessary for each state to assure certain levels of manpower supply in the year 2000. In contrast to previous manpower reports, this study includes data on the mobility of optometrists as well as data on the distribution of both optometrists and ophthalmologists by county for the region.

In addition to presenting data on the supply of vision care providers, this report also summarizes issues relating to the need and demand for vision services, as depicted in the following figure.


Age
Biology
Ethnicity
Income Level
Ethnicity
Education
Place of Residence
Availability & Accessibility of Services
Medicare & Medicaid
National Health Insurance (?)
Need for Care
Unmet Need
Demand for Care
Health Care System: Supply of Vision Care Providers
Improved Vision Status of the Population
Number of Optometrists
Number of Ophthalmologists
Age, Sex & Minority Status
Geographical Distribution
Mobility of Optometrists
Practice Patterns
Scope of Practice

Vision problems are among the most disabling to the individual and the most expensive to society. Over half of the total population report they have had trouble seeing. In addition, over half wear corrective lenses. Vision problems are chronic and developments; as one ages care is needed with increased frequency. As the population becomes more aged, this will result in an increased need for vision services. Some states, like Arizona, will experience a significant increase in need because of this aging.

Within the region there is evidence of an unmet need for vision care. The West as a region has the greatest proportion of persons with very poor vision (20/50 or less). It is estimated that 56 percent of this group (about 921,000 citizens) could see better with proper refractive care. Furthermore, there are about 14,000 people in the region whose blindness could be prevented or cured. These are only two gross indicators of unmet need; there are many more people in the region with less serious problems who could also benefit from proper care.

The need for care reflects the services which should be provided to meet the actual requirements of the population. Demand reflects how many services people really use. Demand is affected by characteristics of the consumer (e.g., education and income) as well as characteristics of the services (for instance, availability and cost). Minority groups appear to be the most easily identified groups which under-utilize vision services.

Optometrists deliver a major amount of primary vision services and often serve as an entry point into the health system; they play a crucial role in prevention and in the early detection of serious problems. Trends within the profession include specialization, group practices, and the growth of third party payment mechanisms. Many states have recently enacted laws which allow optometrists to use diagnostic drugs.

Most of the vision services needed in the population relate to the basic vision examination and the correction of refractive error. Optometrists and ophthalmologists overlap in their abilities to perform these services. Thus it is clear that any useful analysis of vision manpower needs must include data on both of these professions. Policy makers who are deciding how many of various types of providers will be needed in the future must resolve the questions about cost and quality cited by this report.

For the WICHE region the supply of optometrists has increased; in 1973 the ratio of optometrists was 10.9 per 100,000 and in 1978 it was 11.4. There is, however, a serious maldistribution of optometrists within the region. Eight states currently have ratios well below the regional average: Alaska, Arizona, Colorado, Hawaii, Nevada, New Mexico, Utah, and Washington. Even when ophthalmologists are taken into account, the same eight states appear below average in their supply of vision manpower. Furthermore, manpower projections show that a maldistribution of vision care providers will persist to the year 2000 if present trends continue. Some states will have a very low supply (Colorado and Utah) and some states face a possible oversupply (Montana, Wyoming, and Hawaii).

The model used to generate the manpower projections in this report allows for migration by both practicing and newly graduated optometrists. Attrition from death and retirement is figured on the basis of age-specific probabilities, and these numbers are subtracted from the manpower pool. New

graduates are added to the pool. A range of projections was generated by changing assumptions related to student enrollments and the in-migration of optometrists.

Two sets of manpower projections have been produced for each of the thirteen states. One set is based on the assumptions that all students who attend optometry school return to their home state and that no in-migration of optometrists occurs; these assumptions yield a low estimate of future supply. The second set of projections assumes that students return at the current observed rate and that migration continues; this method produces a high estimate.

Chapter VI provides a summary of these projections and other manpower data for each state. Based on manpower needs, it may be appropriate for some states to re-examine their policies relating to the support of optometry students.

There are three schools of optometry in the western region: the Pacific University College of Optometry, Southern California College of Optometry, and the University of California School of Optometry at Berkeley. The total enrollment capacity of these schools is about 250 per year. If the eight states currently low in optometric manpower wished to reach the regional average and the high states wished to maintain their supply, capacity of these three schools could more than meet the region's need. Based on projected manpower needs, it does not appear that any new schools are needed in the West.

In addition to manpower needs, states are also concerned with educational opportunity or the access which students have to professional education. Regionally, student access to optometric education is slightly above the national average. However, states such as Alaska, Arizona, and Colorado have relatively low opportunity in comparison to states like Montana and, more recently, Wyoming. Surprisingly, the eleven WICHE states without optometry schools have recently enrolled more students relative to population than the two states with schools.

Other characteristics of optometrists are also examined. Several years ago the age distribution of optometrists was skewed to the high end; it now appears that the supply of young, new graduates will be offsetting those leaving practice. Women and minorities are severely underrepresented among practitioners. Although enrollment figures show steady improvement for women, minority groups do not show similar gains in the profession. In terms of urban-rural distribution, optometirsts are much more likely than physicians to locate in non-urban areas.

There are a number of factors which could affect the demand for optometric services. The enactment of national health insurance could increase the demand for care among those who need it. Legislation which provides care for special groups could also generate increased demand. In addition, new means of diagnosis and treatment could result in a greater need for optometrists. The uncertainty of these issues make it difficult to predict precisely what the real demand for optometric services will be in the future.

The goal of any manpower policy should be to meet the needs of the patient population. Providing a supply of providers is only part of the means necessary to improve the vision status of the population. By presenting both data and relevant issues, it is hoped this report will be useful to planners of higher education and health policy makers.

346

INTRODUCTION

This report on optometry manpower is designed to provide a rational basis for the development of a preliminary plan to regionalize optometric education in the West. Strategies to encourage the sharing of educational resources in order to maintain an adequate supply of health manpower should be developed from a data based assessment of the region's needs.

This report provides a current picture of the supply of optometrists in the West and projects the size of that supply to the year 2000. Since there are only three colleges of optometry in the thirteen western states, data will be presented on the enrollment characteristics of these colleges and their potential to meet the region's manpower needs. The changing service requirements of the population will also be analyzed. Some of the issues which may affect the demand for optometric services cannot be quantified; however, these general issues will be discussed as they may impact on the need to educate more optometrists.

In 1953, western governors and legislators created WICHE, the Western Interstate Commission for Higher Education. WICHE assists the thirteen[1] member states by: 1) increasing the availability of higher education to students; 2) assisting states in acquiring needed manpower; and 3) helping states increase the effectiveness and efficiency of their higher education programs.

From the beginning of the Compact, health professional education was a major concern. WICHE's Student Exchange Program enables a student in one of the western states to enroll in a program in another western state when the program is unavailable in the home state. This mechanism assures educational access and prevents costly duplication of programs. Of the fifteen fields of study cooperating in the Professional Student Exchange Program (PSEP), eleven are health professional fields. Dentistry, veterinary medicine and optometry account for the largest numbers of students currently involved in PSEP.

In response to regional concern, the Student Exchange Program commissioned a report in 1976 to look at optometric services in the western states.[2] A contract from the Bureau of Health Manpower (Division of Allied Health Professions) to develop a regional approach to optometry education followed (1978) logically from the general role of WICHE and the organization's specific involvement with optometric education. This manpower report represents one of the pieces of work to be accomplished on that contract before a regional plan is developed for review by each of the states; a second report will review other regional approaches to health professional education.

Chapter I of this report provides an overview of the practice of optometry. The second chapter discusses the need and demand for vision care in the western region. Chapter III summarizes data on the current supply of optometrists in the region, as well as the characterisitcs of that supply--age, sex, racial, and geographical distribution. Chapter IV presents data on the entries and exists from the manpower pool--particularly enrollment and migration patterns. Chapter V describes the projection methodology which has been applied to project the supply of manpower for the thirteen states to the year 2000, under varying assumptions. Chapter VI contains the projections of manpower supply for each state; projections are discussed in the context of other relevant data for each state.

FOOTNOTES

INTRODUCTION

1. The member states are: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

2. Seitz, Larry A. Optometric Services in the Thirteen Western States: A Study of Current and Projected Supply and Demand. A Consultant's Report Prepared for the Student Exchange Program of WICHE, May 1976.

Chapter I

THE CHANGING PRACTICE OF OPTOMETRY

Optometrists are a vital part of the health care system. The importance of their role is well stated by the *Report to the President and Congress on the Status of the Health Professions* (1978):

> Optometrists represent only a small proportion of all health practitioners, but they play a significant role in providing health services, mainly as the point of entry to the health care system for the provision of vision care services.[1]

The modern optometrist's role is far broader than the old practice of "fitting spectacles." The American Optometric Association officially defines the optometrist as:

> An expert in measuring human vision, educated, trained and licensed to examine the eye and related structures to determine the presence of vision malfunctions related to educational difficulties, or other abnormalities. He prescribes and adapts lenses, contact lenses, other optical aids, and utilizes vision training to preserve, restore and improve vision efficiency. He may engage in research and teaching.
>
> In addition, when diseased conditions are recognized, he refers to other health care practitioners for treatment.

All of the schools have a four-year professional curriculum which is preceded by two to four years of pre-optometry education at an accredited college or university. While in principle only two years of pre-optometry training is required, more and more students are entering professional school with at least a Bachelor's degree. A 1977-78 survey of optometric institutions indicated that 64 percent of all first-year students had at least a B.S. or B.A. degree.[2]

Whereas the profession developed out of optics, the education of optometrists now includes chemistry, biology, human and visual physiology, neurology, physics, anatomy, pathology, pharmacology, and the behavioral aspects of health and public health. As the scope of practice has increased, the range of practice opportunities for optometrists has grown.

Specialty Areas in Optometry

Increased understanding of vision problems has led to the development of new technologies and treatments, as well as a trend toward specialization in optometry practice. There are at least three generally recognized specialty areas in optometry: vision training, low vision, and contact lenses. Vision training or orthoptics is a technique which can help children whose eyes are not well coordinated or who have amblyopia, stabismus, perceptual problems, or learning disabilities. In addition, vision training or orthoptics also has significant applications for adults. Low vision care involves working with people who have reduced visual acuities and/or restricted visual fields which cannot be corrected with conventional eyeglasses.

The goal of low vision services is to teach the patient to use optical and non-optical aids to maximize what vision he has. Optometry played a major role in the development of contact lenses. While contact lenses are of cosmetic value to many, their greatest value lies in the improvement of vision for persons with vision problems incorrectable by other means.

Along with specialization came the development of optometry residency programs. There are currently three types of residencies recognized by the Council on Optometric Education: rehabilitative, hospital, and pediatric optometry. Other residencies may be found in contact lenses, visual training, and primary care optometry.

Patterns of Practice and a Role in Primary Care

Traditionally, the pattern of practice for the optometrist has been the solo, fee-for-service model. However, there is some evidence that the solo practice pattern will gradually be displaced by emerging group practice models, and by the impact of governmental planning.[3] In the four states of the Northwest solo practice declined by 7 percent of total practicing optometrists from 1973 to 1978, and group associate practice increased by 7 percent.[4]

The health system may be divided into three levels of care: primary, secondary, and tertiary. The goal of primary care is to keep the patient healthy; most patients have first contact with the system at this level, and for most problems the care of the primary practitioner is adequate. More serious problems may require secondary care, or services provided by a consultant specialist. Tertiary care involves highly specialized services with extensive technical backup and is usually hospital-based; a small percent of patients require this kind of care.

Because of the prevalence of vision problems and the non-threatening nature of an eye examination, the first opportunity to receive primary care for many people may come through contact with an optometrist. It has therefore been suggested that the optometrist should perform other screening tests in addition to providing vision services.[5] Thus a growing number of optometrists take blood pressure readings as part of the standard patient visit.

Optometry in Public Health

In addition to the delivery of care to individual patients, optometrists have become involved in the public health aspects of vision. Many state and federal programs use vision consultants; in many state, optometrists are involved in these programs. Examples of these programs include: state department of education; labor, insurance, driver's license, and Medicaid advisory committees; Professional Standards Review Organizations (PSRO); and Health Systems Agencies (HSA). As a group, the optometrists seem to be particularly aware of programs which need vision care consultants; in addition, they are willing to become involved in community programs.

Licensure and the Optometry Profession

The credentialing of health manpower (the formal recognition of professional or technical competence) has received increased attention as an issue related to improving the availability and quality of health care. Studies have shown that:

> . . . state licensure of the health occupations had evolved into a system of varying requirements, responsibilities, and controls that tends, in many instances, to impede effective utilization of health personnel, to inhibit geographic and career mobility, and to foster variable license standards and procedures in different regions of the country.[6]

Because of these problems there has been some interest in a national certification system. This alternative is often opposed by states who argue for their sovereign rights and by the professions who wish to maintain their own standards. State differences in optometry licensing are reflected in the WICHE states in the scope of practice allowed in the different states and other mechanisms which encourage or inhibit mobility.

Only seven of the thirteen western states have reciprocity agreements for optometry (see Table 1.1). While Oregon and California can afford to maintain their own standards because of the large numbers of new optometrists graduating in those states who tend to remain, this policy (of no reciprocity) in other states may be limiting in-migration. Colorado, for instance, has a relatively low ratio of optometrists to population (9.3 per 100,000) and does not have a reciprocity agreement.

Optometrists have been among the leaders to require continuing education for relicensure. Currently forty-four of the fifty states require continuing education; in the WICHE region only California does not require continuing education for relicensure.

The other very important area for recent licensure changes affecting optometrists involves the use of pharmacological agents. Nationally, twenty-two states now have statutes which allow optometrists to use drugs for diagnostic purposes, and six states have "silent laws" which neither prohibit or permit optometrists to use drugs. Only two states in the nation allow optometrists to use therapeutic drugs. In the WICHE region, seven states have laws permitting optometrists to use diagnostic drugs and an eighth state is "silent" (see Table 1.1). The state debates on the drug issue have been heated. The optometrists view the use of diagnostic drugs as allowing them to perform better and more complete services, while eye physicians are generally opposed to this expanded scope of practice. Part of the solution to this problem has been to require that optometrists in practice take a certified course on drugs, as required in the current optometric curriculum, in order to be able to use the drugs.

Increased Productivity by the Use of Technology and Technicians

Other factors affecting the practice of optometry include the use of optometric assistants and technicians and new technologies. New technologies are often relatively expensive but they also make it easier to detect pathology, to measure visual functions, and to design lenses. The "automatic refractor" prints out an objective measurement which can be read by a technician with little training. The Visually Evoked Response allows for visual measurements to be made on patients who have limitations in communication and marked visual impairment. Although some have suggested that technology might replace practitioners, it is unlikely that machines

Table 1.1

SELECTED CHARACTERISTICS OF OPTOMETRY LICENSURE IN THE WICHE REGION

State	Optometrist Permitted to Use Diagnostic Drugs	Continuing Education Required for License Renewal	Reciprocity Agreement with Other States
ALASKA	No	Yes	Yes
ARIZONA	No	Yes	Yes
CALIFORNIA	Yes	No[2]	No
COLORADO	No	Yes	No
HAWAII	No	Yes	No
IDAHO	No[1]	Yes	Yes
MONTANA	Yes	Yes	Yes
NEVADA	Yes	Yes	Yes
NEW MEXICO	Yes	Yes	Yes
OREGON	Yes	Yes	No[3]
UTAH	Yes	Yes	Yes
WASHINGTON	No	Yes	No
WYOMING	Yes	Yes	No

[1] This is a "silent state;" laws neither prohibit or permit drug use.

[2] State has enabling legislation but state board does not require it.

[3] The law is somewhat unclear, but it appears that state examination is required.

can make clinical judgments. These new technologies do make it possible for the optometrists to perform some tasks more quickly, or to delegate them to technicians.

One way to increase the number of health services provided is to use auxilliary personnel, people with less formal training who can effectively perform routine, time-consuming tasks. Use of paraprofessionals frees the professional to use his skills only on those problems which require his or her real expertise.

The use of ancillary personnel has been a relatively new development in the practice of optometry. Today more optometry colleges are teaching their students how to work as a member of a team. Although many practitioners train assistants in their own offices, there has been a growth in the number of formal training programs for optometric assistants. A new kind of program at the college level trains "optometric technicians;" there are now eight of these programs accredited (two of these in the West) and many more non-accredited programs. The role of these technicians is still evolving; their responsibilities are those which the optometrist chooses to delegate to them.

Opticians are another category of provider who must be included in a diccussion of vision care manpower. Some of the services they provide overlap with those of optometrists.

> Dispensing optician and optical mechanics (optical technicians)--Make, fit, supply, and adjust eyeglasses prescribed by eye physicians (ophthalmologist or oculist) and optometrists to correct defective vision. Optical technicians grind and polish lenses to specifications of prescriptions and assemble lenses and frames. Dispensing opticians then fit and adjust the finished glasses to the customer's facial features. In some states, dispensing opticians also fit contact lenses.[7]

This federal source listed about 1,700 opticians practicing in the thirteen western states in 1969; this number is undoubtedly much larger now.

Questions of Cost and Quality

At this time many hard questions are being asked about how to contain the cost of health care while still providing services to those who need them (see also Chapter II). The role overlap of opticians with optometrists, and optometrists with ophthalmologists has thus become controversial. Each increase in the level of training is expensive; for instance, it has been estimated that the education of an optometrist costs about one-third of what it costs to educate an ophthalmologist.[8] The question then becomes what level of training is required to meet the health care needs of the population.

Some prepaid group practices have experimented to find the most effective and least costly vision staffing patterns. One model which uses the optometrist as the primary level provider also uses technicians and opticians at their optimal level of training. The ophthalmologist in this setting provides mostly secondary and tertiary care.[9] The vision care services in the military and in the veterans' hospitals have been organized similarly. This is, however, only one model that is clearly not generalizeable to all practice situations. For instance, the patient load per optometrist may be so great in some Health Maintenance Organizations (HMO) that the optometrist is unable to provide a full scope of services.[10] Some rural populations also are not large enough to support a multi-disciplinary practice.

Inter-Professional Relationships

In order to meet all the needs of his patients the optometrist must rely on inter-professional linkages. The optometrist who works with learning disabilities must cooperate with psychologists, audiologists, social workers, pediatricians, and educators. The optometrist refers patients with high blood pressure or other systemic problems to the internist, family practitioner,or other health specialist. A certain number of his patients need to be referred to the ophthalmologist. While ideally the roles of different health care providers might be considered complementary, they are sometimes competitive.

The problems in the relationship between ophthalmology and optometry are largely centered on the question of what the proper scope of optometry and ophthalmology should be. This question has become more burning as the country's supply of ophthalmology specialists has grown. With an increase in the number of ophthalmologists, each now performs, on the average, eighty-four major operations a year.[11] These numbers suggest ophthalmology is becoming less a surgical specialty. The diagnosis and treatment of refractive errors take about 36 percent of the ophthalmologist's practice time.[12] It has been suggested by others that 50 to 90 percent of the average ophthalmologist's practice consists of correcting errors of refraction, phorias, tropias.[13] Thus the ophthalmologist is often providing many of the services also provided by optometrists.

The position of the optometrists may be summarized by the following comments from the Dean of the Pacific University College of Optometry:

> . . . the amount of formal education in basic optics, physiological optics, theory and practice of optometry and case analysis is heavy in the optometric curriculum. . . . So while we can talk about their being overlap in the delivery of care between the two disciplines it would be inaccurate to state there is a great deal of similarity in emphasis and coverage in formal education.[14]

From the patient's standpoint, as well as from the standpoint of the effectiveness of the health care system, it is desirable that ophthalmology and optometry cooperate. There should be interplay between the two professions during their training programs, in practice settings, and in continuing education activities. A report from the Association for Academic Health Centers has recommended several basic tenets upon which this cooperation should be built, including a recognition of both optometry and ophthalmology as primary entry points into the health system, depending on the patient's freedom to select the provider.[15]

Optometry Manpower Data and This Report

The last comprehensive optometric manpower survey was done in 1973 by the Optometric Manpower Resources Project (HRA Contract No. 1M1-14173). That study provided most of the data used in subsequent optometry manpower publications, including the 1976 WICHE report on the western region. Although there is a replication of the 1973 survey currently underway, the new data were not yet available for inclusion in this WICHE report. Even when these new data do become available they may not be reliable. In this new national study, manpower data are being collected for one group of states through the National Center for Health Statistics and the Cooperative Health Statistics System; each of the twenty-eight states in the system operate under separate contract. Data for the remaining states are being gethered by the Optometry Manpower Resources Project, associated with the American Optometric Association. This arrangement has led to inconsistencies in data collection and a lowered response rate from the optometric profession.

Since current data on the number of optometrists were unavailable from the national survey, other sources of data were sought. These data were obtained largely through the cooperation of the American Optometric Association, state optometric associations, state licensing boards, and the schools of optometry. While the WICHE Manpower project was able to assemble a vast amount of recent manpower data, the contract did not allow for primary data collection.

This WICHE manpower study includes data on two major factors which generally have not been included in optometric manpower studies. First, the effects of interstate migration of optometrists as a supply factor is examined in some detail and is used in projecting the future manpower supply. This factor is especially important in the WICHE region where data show that a large number of practicing optometrists have resettled, especially following graduation from a WICHE region school.

Secondly, this report includes data on the supply of optometrists as well as of ophthalmologists in the region. However, the quality of data available on ophthalmologists is not comparable to that available on optometrists from the Manpower Resources Project. The relationship between the supply of ophthalmologists and optometrists is examined on both a state and county basis.

Summary

Optometrists play an important role in the delivery of health services. For many patients, optometrists provide a primary point of entry into the delivery system and therefore are important in prevention. The optometrist receives a high level of training in optics and in the examination procedures necessary for prescribing corrective lenses; he also receives basic training in the detection of eye disease. As the curricula of the colleges of optometry have increased in quality and scope, the profession has changed.

Specialty areas have developed, including vision training, low vision and contact lenses. In addition, the typical pattern of practice is changing from the solo practice model; optometrists are becoming increasingly involved in group and multi-disciplinary practice settings and in public health programs. Recent licensure changes--particularly those which permit optometrists to use diagnostic drugs--are indicators of the broadening scope of practice.

Optometrists and ophthalmologists overlap in the training and skills required to perform diagnostic visual examinations. The issues of cost-effectiveness and the quality of services provided are often debated. Inter-professional conflict often clouds the more important question about what services people really need.

FOOTNOTES

Chapter I

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Chapter II

THE NEED AND DEMAND FOR VISION CARE IN THE REGION

The "need" and "demand" for health care are different but interrelated concepts. Need reflects the services which should be provided to meet the actual and basic requirements of the population. Service requirements are developed from the incidence and prevalence of health problems, and the types and amount of care judged necessary to prevent, detect, and treat these problems. Defining the need for vision care depends on the availability of good epidemiological data, as well as agreement about the kind of care required for various types of vision problems. In other words, how many people are there in the region with vision disorders, and what kind of care do they need? Since there is generally a lack of hard data to specifically answer these questions, the need for care is usually estimated. Unmet need is that need in the community which is not taken care of by the health care system; it is most important to fill unmet needs if we wish to improve the vision status of our citizens. There are several well-recognized pockets of unmet need in the United States--usually in the central city, among ethnic groups and the elderly, and in geographically remote areas.

Demand reflects the numbers of people who actually seek care, and is relatively easily measured. Ideally the demand for care should reflect need. In fact, demand is partly a function of the severity of the health problem and the extent to which it interferes with the patient's life. In addition, studies on health care utilization show that seeking care also depends on the accessibility and acceptability of services. Other characteristics of the patient including education, income level, health behaviors and beliefs affect the extent to which his need for care becomes demand. Excessive or extra demand may actually exist among some groups in the population; for instance, owning several pairs of eyeglasses or wearing contact lenses for cosmetic purposes might be considered extra demand.

The suggestion that any care demanded by a patient might be excessive is a matter of judgment. Whether or not any services are considered "extra" depends upon whether need is defined in terms of acceptable or desirable levels of care. The majority of vision care needs relate to lens prescriptions, and the demand for service resulting from this kind of need largely depends on the patient's own choice (e.g., type of eyeglasses or contact lenses). As discussed in the previous chapter, the roles of optometrists, ophthalmologists and even opticians overlap in their abilities to meet these vision care needs. The consumer is faced with a choice about where to go and how much to pay to obtain his care. It is not surprising, then, that quality assurance and cost containment have become important issues to vision care practitioners. It is not within the scope of this report to make recommendations about these policy issues, but rather to point out how these issues may affect the need for a certain kind of health manpower. However, it is clear that legal, legislative and regulative decisions relating to cost, quality, and reimbursement will affect the demand for vision care, as well as the portion of that demand which will be met by optometrists.

This chapter will review available data on the vision status of the population and the need for vision care in the WICHE region. The most important objective of this chapter is to describe the amount of unmet need which exists. Factors affecting the demand for vision services will also be discussed.

The Need for Vision Care and Indicators of Unmet Need

The vision status of the population may be broken into three levels: 1) those who do not need glasses for near or distant vision; 2) those whose conditions can be corrected by glasses or vision training; and 3) those who are visually impaired.[1] The majority of people who need care clearly fall into the second category, and it is this group that would most often be cared for by the optometrist. Some of those in the third category may also need a lens prescription or visual training. However, screening and referral by the optometrist may help prevent more serious visual impairments.

The tendency of the general population to report vision problems is perhaps the best indicator of the widespread need for vision care services. Data from the Health Interview Survey (U.S. Public Health Service, 1971-72[2] show that by the time the population reaches age twenty-five over half has had trouble seeing, and by age sixty-five more than 80 percent report having had vision problems. (See Table 2.1) With increasing age, fewer people report they have never worn glasses. About 11 percent of a national sample report they "have trouble seeing even when wearing glasses or contact lenses." About 3.5 percent report they have "ever missed school or work because of trouble with eyes." It should be noted that these data may be of questionable quality for documenting the level of need in the population. However, these data provide available indicators of perceived need.

Certain sub-groups in the population have a greater need for services, for instance, the aged or multiply-handicapped. American Indian children have been shown to have more vision anomalies and more serious problems than Caucasian children. On the basis of this study it has been suggested that these children need two and a half times the care which Caucasian children need.[3]

Good vision is crucial to the learning of children, to the safety and productivity of workers, to the prevention of accidents and to the maintenance of independent living. It is therefore important to know how many of our citizens could see better than they do, or how many people in the western region have unmet vision needs. As previously noted, it is difficult to quantify unmet need.

The Health Examination Survey is designed by the Public Health Service to collect statistics on the health status of the American population; one of the reports from the 1971-72 survey contains data on the refraction status and refraction potential of the population. The extent to which the visual acuity of the population could be improved can be seen in these data; and these data can serve as one indicator of unmet need. For the nation, 3.3 percent of the population has vision of 20/50 or less, and 52 percent of this group with vision 20/50 or less could have their vision improved with proper refractive care (see Table 2.2). Of the 14.1 percent of the population aged sixty-five to seventy-four with very poor vision, 40 percent could have better vision.

Table 2.1

PREVALENCE RATES* FOR MEDICAL HISTORY FINDINGS PERTAINING TO THE EYE AMONG POPULATION BY AGE IN THE WESTERN REGION UNITED STATES, 1971-72

Selected Medical History Finding (both sexes, all races)	Age in Years							
	6-11	12-17	18-24	25-34	35-44	44-54	55-64	65-74
Ever have trouble seeing:	13.8	37.0	48.8	52.6	51.8	81.8	88.1	83.3
Visited doctor about trouble seeing:	94.8	89.6	90.0	90.4	92.5	96.3	98.3	98.0
Ever wear glasses or contact lenses:	11.3	32.0	51.5	57.0	56.4	89.8	95.4	95.6

*Rates per 100 population

SOURCE: U.S. Dept. of Health, Education, and Welfare. Refraction Status and Motility Defects of Persons 4-74 Years, United States, 1971-72. DHEW Publication No. (PHS) 78-1654, Series 11, No. 206, National Center for Health Statistics, August 1978, p. 99.

Table 2.2

PERCENTAGE OF POPULATION WITH 20/50 VISION OR LESS AND PROPORTION WHOSE VISION COULD BE IMPROVED BY PROPER REFRACTION, UNITED STATES, 1971-72

Age (both sexes, all races)	Percent with 20/50 Vision or Less	Proportion Whose Vision Could Be Improved
4-5	1.9	26
6-11	3.5	60
12-17	2.7	70
18-44	1.5	67
45-54	3.2	53
55-64	4.7	40
65-74	14.1	40
All ages, 4-74	3.3	52

SOURCE: U.S. Dept. of Health, Education, and Welfare. Refraction Status and Motility Defects of Persons 4-74 Years, United States, 1971-72. DHEW Publication No. (PHS) 78-1654, Series 11, No. 206, National Center for Health Statistics, August 1978, p. 57.

In comparison with other regions of the country, the West has the greatest proportion of persons (4.1 percent) with vision of 20/50 or less (see Table 2.3). Fifty-six percent of those people with low vision could have their sight improved with proper lens care. It is startling that the West as a region seems to need vision care as much as the South, a region which is generally known for the poor health status of its citizens. By applying these percentages to the WICHE population, it can be estimated that there are at least 1,644,100 persons with vision of 20/50 or less. Fifty-six percent of that group or about 920,696 people could see better with proper lens care. This amounts to nearly one-fortieth of the region's population which has an unmet vision need by this criterion. In addition, there are many others with vision better than 20/50 who could have their vision corrected, as well as those with near-vision who could benefit from proper lens care.

The variables associated with poorer vision and a greater need for care are similar to those found with other indicators of health status. Non-whites need more care than whites, and persons with lower family incomes need more care than those with higher incomes.

The role of optometrists in meeting these vision needs of the population is summarized by a recent publication from the Bureau of Health Manpower:

> In terms of the need for vision care services, both met and unmet, about half of the population who require some form of vision care services actually receive them. About nine out of ten of the patients who need vision care require services which are within the present scope of optometry. Only about 10 percent of the population with vision care problems requires medical treatment or surgery that must be provided by ophthalmologists, as shown by the 1968 NCHS Survey of Ophthalmologists.
>
> In terms of actual services currently being provided, about two-thirds of those receiving vision or eye care, or 33 million people, receive such care from optometrists. Of these, about one-third, or 17 million, seek and receive vision or eye care from ophthalmologists. As reports show, a substantial area of overlap exists in the provision of refractive services, and at least some proportion of the population that receives ophthalmological care could go to optometrists for this care.[4]

The most serious vision problems which go untreated result in total loss of vision. "The case for the elimination of unnecessary blindness if justified not only on humanitarian grounds but also by its social and economic consequences. In terms of economic loss, blindness is the most expensive of all causes of serious disablement."[5] Loss of sight often means loss of independent functioning; for older citizens this may mean that nursing home care becomes necessary. As the country's population becomes older, there will be more elderly people with degenerative diseases and more blindness. Although sight can be restored in some cases prevention of blindness is the most effective strategy. While the medical and surgical skills necessary to treat blindness are outside of the scope of optometry practice, screening and referral by optometrists can be crucial in early detection and treatment.

Table 2.3

PERCENT OF POPULATION WITH 20/50 VISION OR LESS BY REGION, AND PROPORTION OF THOSE WHOSE VISION COULD BE IMPROVED WITH PROPER REFRACTION, UNITED STATES, 1971-72

Region	Percent of Population, Aged 4-74 with Vision 20/50 or Less	Proportion Whose Vision Could Be Improved
Northeast	3.0	40
Midwest	2.7	52
South	3.7	57
West	4.1	56
Total, U.S.	3.3	52

SOURCE: U.S. Dept. of Health, Education, and Welfare. Refraction Status and Motility Defects of Persons 4-74 Years, United States, 1971-72. DHEW Publication No. (PHS) 78-1654, Series 11, No. 206, National Center for Health Statistics, August 1978, pp. 66-72.

There are about fifteen people per 100,000 population who become blind each year (see Table 2.4). The incidence directly increases with age, so that there are about seventy persons per 100,000 population over age sixty-five who lose their vision every year. In the WICHE region there were about 5,970 people who became blind in 1978 (see column 3 in Table 2.4). In terms of unmet need, the important question to ask is: what amount of this blindness could be prevented or cured? In order to estimate how much of this blindness could be prevented by good vision care one must look at the prevalence of the different causes of blindness (see Table 2.5), and for which causes treatment could be effective.

A report by the World Health Organization (WHO) lists several activities which would help improve sight: 1) prevention of the occurrence of blinding eye diseases which are most common in developing countries; 2) limiting the progression of blinding diseases like glaucoma through screening and proper treatment; and 3) restoring visual function through cataract surgery. This WHO report estimates that about two-thirds of the world's blindness is preventable. Since the rate of blindness in the United States is much lower than in developing countries, there is probably a relatively smaller amount of blindness in the United States which is preventable. There are, however, some groups within the western region which have eye diseases similar to those in developing countries. For example, the Indians of the Southwest have a high prevalence of trachoma, a disease which can lead to blindness if not properly treated.[6]

Conservatively, it could be said that those blind from cataracts could be cured, and blindness caused by glaucoma could be prevented. Thus, in the WICHE region, of the nearly 60,000 persons estimated to be blind, about 14,000 could have had their blindness cured or prevented with proper vision care. As research brings a greater understanding of etiology, more of this blindness will be treatable in the region. Furthermore, there is evidence of a significant unmet need for vision care, since nearly a million citizens could see better with proper care.

Vision Care Needs Over the Life Span

In order to prevent serious eye problems, vision evaluation or screening should begin before the child enters school. Annual examinations have been recommended during the school years because rapid growth and development may cause changes in the visual mechanism. Normally, there are fewer changes in vision between the ages of twenty-five and forty and less frequent examinations are necessary. During the mid-forties, loss of elasticity of the lens (presbyopia) makes reading more difficult and reading glasses are usually required. At this time the incidence of glaucoma, cataract and other degenerative diseases begins to increase. During the sixties and seventies vision problems become more common and more severe. As previously discussed, many older people suffer with poor vision, when adequate treatment could bring them near-normal vision.[7]

The population of the United States and the West is aging. Not only are people living to older ages, but these older people are increasing in proportion to the total population. This more aged population will need more health care and specifically more vision care.

Table 2.4

INCIDENCE OF BLINDNESS BY AGE IN UNITED STATES, 1970 AND ESTIMATED INCIDENCE IN WICHE REGION, 1978

Age Group (in Years)	Rate Per 100,000 Population	Total Number of Persons Newly Reported Blind in WICHE Region
Under 5	4.0	121
5-19	5.1	442*
20-44	6.1	1,010
45-64	20.4	1,605
65 and Over	70.3	1,792
All Ages	15.2	5,970**

*Census population data are for age groups 5-17 and 18-44.

**Total number of persons blind in WICHE region exceeds 15.2% because of the particular age distribution of western region.

SOURCE: Goldstein, H. Incidence, Prevalence and Causes of Blindness. "Public Health Reviews," Vol., 3, No. 1, 1974, p. 9.

Table 2.5

PREVALENCE OF CAUSES OF BLINDNESS, UNITED STATES, 1970 AND ESTIMATED FREQUENCY IN WICHE REGION, 1978

Major Affection Grouping	Rate Per 100,000 Population	Estimated Number of Persons in WICHE Region, 1978
Glaucoma	16.2	6,496
Cataract, Total	19.2	7,699
Retinal Disease, Total	36.6	14,677
Retrolental Fibroplasia	3.7	1,484
Myopia	4.3	1,724
Cornea or Sclera	6.9	2,767
Uveitis	7.5	3,007
Optic Nerve Disease	13.5	5,413
Other	15.9	6,376
Unknown	22.7	9,103
TOTAL	146.5	58,746

SOURCE: Goldstein, H. Incidence, Prevalence and Causes of Blindness. "Public Health Reviews," Vol. 3, No. 1, 1974, pp.14-15.

Changes in the size or age composition of the population will lead to changes in the need for vision care services. Increases in need due to population growth are more easily recognized than increases in need due to shifts in the age distribution. Table 2.6 presents information on the expected changes in needs related to both size and age changes in the population. The first column gives the percent increase in vision care needs due to changes in the size of each state's population between the years 1980 and 2000, if the age characteristics of the population were to remain constant. The second column indicates the percent change in need expected on the basis of projected changes in the age distribution of the population, if its size were to stay constant. For instance, the ratio of optometrists considered adequate in 1980 for Arizona would need to be increased 10 percent by the year 2000 to meet the needs of the expected number of older citizens. whereas Utah would need less than 1 percent more care based on the projected age-shift in its population.

The method used for developing Table 2.6 is based on the Birchard and Elliott study.[8] That study developed age-specific rates for vision defects, estimated the desired frequencies of complete vision case studies, and estimated the proportional number of case studies required for each age interval of the population. One of the limitations of this study is that is fails to account for the amount of screening required even though a problem does not exist. However, this methodology does allow one to see the relative effects of age on the states' needs for care.

Factors Affecting the Demand for Care and the Utilization of Services

The demand for eye care is very high. This very high rate of utilization of eye examinations probably reflects the importance of vision and the relatively painless and non-invasive nature of this service. Almost 90 percent of the population over the age of three (see Table 2.7) report they have had an eye examination, and the percent reporting never having had an eye examination drops with increasing age. Persons with higher incomes are more likely to have had an examination; 86.2 percent with incomes under $10,000 report having an examination in contrast to 91.4 percent of those with incomes over $15,000. The higher the level of education, the greater is the likelihood of having had an examination. Women are somewhat more likely to have had an eye examination than men.

Non-white populations are the group least likely to use eye services: 16.7 percent of non-white respondents report never having had an eye examination, in contrast to only 7.9 of the white population. While these racial differences are confounded by social class differences, the minority population appears underserved (for data on the shortage of minority optometrists, see Chapter III).

Although differences related to place of residence are small, they probably reflect differences in the accessibility of services. People in the central city are less likely than other urban dwellers to have had an examination and rural residents are more likely to report they have never had an eye examination or a greater length of time since the last eye examination than urban residents.

Table 2.6

PROJECTED INCREASES IN OPTOMETRIC NEEDS BETWEEN 1980 AND 2000 DUE TO CHANGES IN POPULATION SIZE AND AGE FOR WICHE STATES

	Percent Increase Due to Increase in Population Size	Percent Increase Due to Age Shifts in Population
ALASKA	33.1	8.4
ARIZONA	50.8	10.5
CALIFORNIA	22.6	7.1
COLORADO	38.9	6.6
HAWAII	27.7	7.9
IDAHO	33.7	-0.3
MONTANA	23.6	1.2
NEVADA	38.2	8.6
NEW MEXICO	32.1	8.4
OREGON	26.2	1.9
UTAH	34.4	0.4
WASHINGTON	14.0	4.2
WYOMING	30.1	8.3
WICHE REGION	26.4	5.3

NOTES: 1. Ratio of O.D.'s refers to O.D.'s/100,000 population needed.

2. States of Alaska, Nevada, New Mexico, and Wyoming had no age-specific projections. Census projections for these states were proportionately adjusted according to regional age trends.

3. State population projections--U.S. Bureau of the Census, Series P-25, No. 735, Series II-B. Assumes 1970-75 interstate migration rate.

Table 2.7

UTILIZATION--PERCENT OF PERSONS THREE YEARS AND OVER HAVING OR NEVER HAVING AN EYE EXAMINATION ACCORDING TO SELECTED CHARACTERISTICS: UNITED STATES BASED ON DATA COLLECTED IN HEALTH INTERVIEWS IN 1973

Characteristic	Ever Had Eye Examination	Never Had Eye Examination
All Persons 3 Years & Over[1]	87.7%	9.0%
Age		
3-16 Years	79.7	17.5
17-24 Years	89.6	6.6
25-44 Years	87.7	7.9
45-64 Years	93.6	4.1
65 Years & Over	94.0	3.3
Sex		
Male	85.7	10.1
Female	89.6	8.0
Color		
White	89.1	7.9
All Other	77.9	16.7
Family Income		
Less than $3,000	85.5	11.9
$3,000-$4,999	85.8	10.4
$5,000-$6,999	85.5	11.7
$7,000-$9,999	86.7	10.0
$10,000-$14,999	88.4	8.8
$15,000 or More	91.4	5.9
Education of Individual[2]		
Less than 12 Years	88.0	8.9
12 Years	91.8	4.7
13 Years or More	94.6	2.7
Geographic Region		
Northeast	90.6	6.5
North Central	90.1	7.0
South	83.3	12.8
West	87.9	8.8
Place of Residence		
SMSA	88.6	8.0
Central City	87.7	8.9
Not Central City	89.3	7.4
Not SMSA	85.7	11.3
Non-Farm	85.8	11.2
Farm	85.5	12.0

[1] Includes unknown income, education, and health status.

[2] Shown only for persons 17 years of age and over.

SOURCE: U.S. Dept. of Health, Education, and Welfare, Public Health Service. Use of Selected Medical Procedures Associated with Preventive Care, United States, 1973. DHEW Publication No. (HRA) 77-1538, Series 10, No. 110, National Center for Health Statistics, March 1977, p. 16.

In terms of regional differences, western respondents to the National Health Survey are more likely to report they had never had an eye examination (8.8 percent) than residents in the Northeast or North Central states. Only respondents from the South are more likely than westerners to report they had never had an eye examination.

Table 2.8 illustrates how the use of eyeglasses varies by sex and age. Women are more likely to wear corrective lenses than are men, 50.9 percent versus 43.1 percent. The percent with lenses increases directly with age as would be expected on the basis of age-related needs. Women are more than twice as likely as men to wear contact lenses (2.9 versus 1.2 percent). For both sexes the demand for contact lenses is greatest for respondents between the ages of seventeen and forty-four; the greatest demand for this care appears among women aged seventeen to twenty-four (9.5 percent). These sex and age related differences in demand for contact lenses are clearly related to concerns with fashion and appearance, as well as to advances in eye care services. As the technology of contact lenses has advanced, the desirability of this kind of service has also increased. The American Optometric Association estimates that the use of contact lenses may have increased to 6 percent of the population; they attribute this to the development of the new soft lenses.

The medical care system in this country is focusing increasingly on health maintenance and health promotion. At the same time consumers are demanding more help to stay well, and are assuming greater responsibility for their own health. Along with these trends, there have been more public health education programs. The American Optometric Association recently launched a "National Consumer Communications Program" to inform the public about the importance of good optometric care. This coordinated multi-media program, supported by payments from practicing optometrists, was designed to inform the public about the role of the optometrist in primary care and about the components of good care. This kind of publicity could produce an increased demand for optometric care.

The optometric profession, like most other professions, opposes misleading advertising and commercialism. The Federal Trade Commission has recently been involved in legal battles to assure competition by allowing price advertising in the health professions. In some states commercial interests have advertised to sell contact lenses for a very cheap price; these lenses are often not fitted properly and may harm the consumer. This illustrates the optometrists' concerns about the control of quality and protection of the public. Eyeglasses may be able to be made more cheaply and competitive pricing may make eye-wear more affordable for those who need it. On the other hand, consumers need some assurance that the materials used to make their glasses are safe and that their prescriptions have been properly filled. Perhaps most important, the patient needs some assurance that the provider of services can recognize and manage serious vision problems and refer a problem when appropriate.

The facts seem to indicate that the optometrist is educated and is capable to diagnose the presence or absence of ocular pathology and make proper referrals. State optometry laws reflect this. Wyoming's State Law states that: "The practice of optometry is the employment of any means other than surgery for diagnosing the presence or absence of ocular

Table 2.8

PERCENT DISTRIBUTION OF PERSONS 3 YEARS OF AGE AND OVER WITH CORRECTIVE LENSES BY TYPE OF LENS, ACCORDING TO AGE AND SEX UNITED STATES, 1971

	Corrective Lenses	
Sex and Age	Eyeglasses Only	Contact Lenses With or Without Eyeglasses
Male		
All Ages 3 Years & Over:	43.1%	1.2%
3-16 Years	14.2	0.3
17-24 Years	30.4	3.4
25-44 Years	35.3	1.8
45 Years & Over	84.4	0.6
45-54 Years	77.1	0.5
55-64 Years	89.3	0.7
65 Years & Over	89.3	0.7
Female		
All Ages 3 Years & Over:	50.9	2.9
3-16 Years	17.8	0.9
17-24 Years	37.5	9.5
25-44 Years	42.7	4.2
45 Years & Over	90.3	0.7
45-54 Years	84.9	0.9
55-64 Years	93.8	0.6
65 Years & Over	93.0	0.7

SOURCE: U.S. Dept. of Health, Education, and Welfare, Public Health Service, Characteristics of Persons with Corrective Lenses, United States, 1971. DHEW Publication No. (HRA) 75-1520, Series 10, No. 93, National Center for Health Statistics, September 1974, p. 11.

pathology and for the measurement of power or range of human vision . . . ." Colorado recently changed their optometry law to reflect this responsibility. Court decisions have also required that optometrists examine for eye diseases.

A report on medicare reimbursement states that optometrists are ". . . qualified to provide services for the detection and preliminary diagnosis of ocular disease and ocular manifestation of system disease. Referral, when indicated, is made to ophthalmologists and other health care practitioners for definitive diagnosis and medical or surgical treatment."[9] In fact, the report compared the eye examination procedures utilized by most optometrists and ophthalmologists and found them to be virtually the same for older Americans.

More legislation is being enacted to help protect the nation's health, and some of it may increase the demand for vision care. As the importance of vision to job performance and safety were recognized, the Office of Safety and Health Administration in the Labor Department developed regulations about the kinds of vision care and eyeglasses workers must have. Other legislation has required that the vision needs of special population groups must be met. For instance, the Education of the Handicapped Act could generate an increased demand for optometric care if it were implemented in each state.

The American Optometric Association recently developed a list of federal programs which could impact directly on the optometrist's office practice (see Figure 2.1). Although a specific piece of federal legislation might say that optometrists can provide services in a program, the rules and regulations developed at the federal or state level could exclude optometry. As more citizens are covered by such programs, the demand for vision care increases and some of this demand can be met by optometrists.

Third party reimbursement has had an increasing impact on optometrists. In many states, the expansion of prepaid vision care insurance has significantly increased the demand for optometric services.

A program which could potentially have a great affect on the demand for care is national health insurance. The impact of such legislation on the demand for care and the consequent need for health manpower would vary greatly for different types of services. In addition, the particular form of national health insurance legislation and the rules and regulations that would be developed could affect the way national health insurance impacts on a profession like optometry.

> The key factor in evaluating the effects of these demand pressures is the shape of the health services supply curve, which reflects the responsiveness of the quantity of services supplied to changes in price. (The introduction of any national health insurance plan) . . . will tend to restructure the health care market and redistribute care among the population as cost barriers to care are lowered for part of the population.[10]

The Birchard and Elliott study[11] estimated that a ratio of 14.3 optometrists per 100,000 population would be needed under national health insurance (the current regional ratio is 11.4). Although the future of national health

Figure 2.1

FEDERAL PROGRAMS WHICH CAN AFFECT OPTOMETRY

Programs Affecting Children and Youth

*Developmental Disabilities Act
*Early and Periodic Screening, Diagnosis and Treatment (EPSDT)
*Education of Handicapped Act
*Elementary and Secondary Education Act
Follow Through
Headstart
*Maternal and Child Health/Crippled Children's Services

Programs Affecting the Handicapped

Supplemental Security Income
*Vocational Rehabilitation Act
*Comprehensive Services for Independent Living

Programs Affecting Older Americans

*Older Americans Act
Medicare

Programs Affecting Low Income Persons

*Medicaid

Programs Affecting Federal Employees and Wards

Civilian Health and Medical Program of the Uniformed Services (CHAMPUS)
Federal Employees Health Benefits Act (FEHBA)
Indian health programs
Veterans Administration
*Worker's Compensation

Alternate Health Care Delivery Systems

Community health (formerly neighborhood health) migrant health/primary care centers
Group practice facilities program
Health Maintenance Organizations (HMOs) Act

*State implementation legislation is required, thus state as well as federal funding is involved.

SOURCE: Bulletin from the Committee on Public Health, National Health Division of the American Optometric Association, November 1978.

insurance is unclear, its enactment would probably result in an increased demand for vision care, and an increased need for vision care manpower.

Summary

Vision is one of the most vital human senses. Therefore problems in seeing are among the most disabling to the individual and the most expensive to society. The prevalence of vision disorders is very high and the need for care is great--indeed, over half of the general population report that they have had trouble seeing. In addition, more than half the population wear corrective lenses. Because of the chronic and developmental nature of vision problems, care is needed with increased frequency over one's lifetime. The shifting age distribution of the region's population will be reflected in a greater need for vision care.

Within the region there is evidence of an unmet need for vision care. The West is the region of the country with the greatest proportion of persons with very poor vision (20/50 or less). It is estimated that 56 percent of this group or about 921,000 people could see better with proper refractive care. Furthermore, there are probably about 14,000 citizens in the western region whose blindness could have been prevented or cured with proper care. While these are only two gross indicators of unmet need, it is clear that there are at least a million people who are unnecessarily disabled by poor vision. There are many more people in the region with less serious problems who could also benefit from proper care.

Factors related to the need and demand for care were reviewed. In general, those with fewer years of schooling and lower incomes, the elderly and minority groups are less likely to use vision care. Thus there are particular groups in the region whose need for care is great, but whose demands for services are relatively low. Various legislation provides for reimbursement of services to population subgroups which have a special need for vision care (e.g., the developmentally disabled) and these programs can increase the demand for optometric care.

FOOTNOTES

Chapter II

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9. U.S. Dept. of Health, Education, and Welfare. *Report to the Congress: Reimbrusement Under Part B of Medicare for Certain Services Provided by Optometrists*. Public Health Service, Health Resources Administration, Bureau of Health Manpower, Division of Associated Health Professions, July 1976.

10. Cultice, James M. and Roger B. Cole. *The Impact of Comprehensive National Health Insurance on Demand for Health Manpower*. U.S. Dept. of Health, Education, and Welfare, Public Health Service, Health Resources Administration, Bureau of Health Manpower, DHEW Publication No. (HRA) 78-102, July 1976, reprinted November 1977. p. 43.

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Chapter III

THE CURRENT SUPPLY OF VISION CARE MANPOWER IN THE REGION

Licensed Versus Active Optometrists

In 1978, state licensing boards listed 5,131 optometrists licensed and residing in the thirteen western states. However, not all of those licensed are considered active in their profession. Of the number licensed, it is estimated 4,579, or 89 percent, are active. An active optometrist is defined as one who is involved in either practice, research, teaching, or administration within the profession of optometry. Practicing optometrists are those who actually provide care for patients.

The specific proportion of active optometrists varies considerably, depending on the characteristics of each state. For example, states that attract retired persons also attract older optometrists who may retain their licenses but not actively practice. Arizona, for instance, has an active proportion of 82 percent compared to Alaska, which considers all of its licensed optometrists as active.

Throughout this discussion data are presented either in terms of licensed or active optometrists. Ratios of optometrists to population have typically been described with reference to active optometrists per 100,000 population. This convention is maintained here.

Data Sources

Several sources of data have been used as part of the discussion of optometric supply and the characteristics of that supply.

Licensed and active optometrists--the most recent rosters of state licensing boards and state optometric associations were used for 1978 estimates. The comparative totals of licensed and active optometrists for 1973 were taken from the Optometric Manpower Resources Report, 1973 (published in 1976).[1] Only civilian optometrists are included.

Age, sex, and minority status--the Optometric Manpower Resources 1973, was used for baseline data to project current and future trends.

Geographic location--the number of licensed optometrists by county were compiled from the 1978 Blue Book of Optometrists.[2] The number of board-certified ophthalmologists by county were taken from the 1977-78 Directory of Medical Specialists.[3] These sources are considered current as of 1977.

State totals of all ophthalmologists as of 1976 were also taken from American Medical Association manpower data.[4] The Red Book of Ophthalmologists was not used as a source on data on ophthalmologists because its data were not comparable to other data contained in this report.

Population figures--taken from the U.S. Bureau of the Census using 1978 figures for computing state optometrist to population ratios and 1977 figures for computing county ratios.[5] Census Bureau population data for 1976 were also used in computing 1976 ophthalmologist ratios.[6]

In addition to the sources described above, several state sources were incorporated into this chapter and are cited as appropriate.

Supply of Optometrists

Comparisons of manpower supply usually are made in terms of the ratio of active professionals per 100,000 population. In 1978 this ratio showed an average of 11.4 optometrists per 100,000 population across the West with individual states ranging above or below this figure. The appropriate standard to be applied to the adequacy of service is dependent on the productivity of the active optometrists and of other vision care professionals and on the characteristics of the population being served. A ratio of 14.3 practicing optometrists per 100,000 population is an ideal ratio often used in the optometry literature. The 1978 WICHE regional ratio of 11.4 active optometrists provides a reference point for this report.

Table 3.1 compares the current supply of optometrists to 1973 figures. In 1973, the region had a ratio of 10.7 optometrists per 100,000 population compared with a 1973 national average of 9.1 and the slightly higher 1978 regional ratio of 11.4. The current ratio was calculated from the actual number of active optometrists in some states and estimated from total licensed in others.

There is an obvious disparity in the distribution of optometrists across the thirteen states, ranging from a low of 6.7 per 100,000 population in Utah to a high of 15.1 in Montana. While the overall regional ratio has risen, Nevada and Washington have declined from their 1973 levels. Eight of the states remain well below the regional average. In general, states in the southern part of the region tended to have low ratios while the northern most states and those with schools of optometry (California and Oregon have higher ratios.

Supply of Ophthalmologists

The supply and distribution of optometrists cannot be fully understood without also considering the relative supply and distribution of ophthalmologists. Ophthalmologists are physicians who are specialized in the diagnosis and treatment of defects and diseases of the eye. They are trained to provide medical and surgical care and to perform vision examinations and corrections for refractive errors. While medical and surgical treatment procedures are not within the scope of the optometrist, there is considerable overlap between the two professions in the determination of refractive error and the diagnostic vision examination. The overlap is especially important because of the large proportion of the ophthalmologist's time that is spent in tasks that could be performed by optometrists (See Chapter II).

In reviewing the current supply and distribution of optometrists, it is necessary to consider the number of ophthalmologists in the same geographical area. In some cases, a large number of ophthalmologists might have the effect of correcting what otherwise might be an undersupply of optometrists. There may be situations, usually near major population centers, where a combination of ophthalmologists and optometrists might actually create an oversupply of services.

Table 3.1

SUPPLY OF OPTOMETRISTS IN WICHE REGION
1973 and 1978

State of Practice	Licensed[1] Optometrists 1973	Active[1] Optometrists 1973	Active O.D.s[1] Per 100,000 Population 1973	Licensed[2] Optometrists 1978	Estimated[3] Active 1978	Active O.D.s[4] Per 100,000 Population 1978
ALASKA	18	18	5.5	37	37	9.2
ARIZONA	180	149	7.2	239	198	8.4
CALIFORNIA	2820	2421	11.7	3248	2793	12.5
COLORADO	220	208	8.4	262	249	9.3
HAWAII	88	74	8.8	100	84	9.4
IDAHO	89	85	11.0	112	106	12.2
MONTANA	109	101	13.8	128	119	15.1
NEVADA	57	48	8.7	65	55	8.3
NEW MEXICO	87	80	7.3	98	90	7.4
OREGON	337	305	13.7	367	334	13.6
UTAH	87	75	6.5	102	88	6.7
WASHINGTON	435	385	11.2	422	373	9.9
WYOMING	40	40	11.3	55	55	13.0
REGION	4567	3989	10.9	5235	4581	11.4

SOURCES:
1. Optometric Manpower Resources, 1973. Prepared for Bureau of Health Manpower, HRA, DHEW (1976).
2. 1978-79 State Licensing Rosters.
3. Number Active estimated by multiplying total licensed by proportion active in 1973.
4. 1978 population--U.S. Census Bureau. P-25, No. 794, March 1979.

NOTE: There are approximately 20 additional O.D.s working for the Public Health Service in the WICHE region that are not included in the 1978 figures above.

The number of ophthalmologists will not necessarily correlate to the number of optometrists in a particular state. States with residency programs in ophthalmology tend to have a higher ratio of ophthalmologists to optometrists and to total population than states without such programs.

The number of ophthalmologists reported for a specific state will vary according to the definition of ophthalmologist. Table 3.2 for instance compares optometrists with ophthalmologists using the 1976 American Medical Association count of physicians reporting a specialty in ophthalmology. Table 3.3 compares optometrist ratios with 1977-78 counts of board certified ophthalmologists. Board certified ophthalmologists are physicians who have met the additional requirements for certification in the specialty of ophthalmology. Using the ratios shown in Tables 3.2 and 3.3, it is estimated that about 87 percent of the ophthalmologists in the WICHE region are board certified.

An upcoming federal publication should alleviate some of the problems of identifying the numbers and location of both certified and uncertified ophthalmologists based on 1975 data.[7] Unfortunately, information contained in the upcoming report was not available prior to the completion of this report.

Even with the inclusion of ophthalmologists there remains a distribution problem. The same eight states that were low in optometric manpower remain low with the inclusion of ophthalmologists, as shown in Tables 3.2 and 3.3. Additionally, some states with relatively high optometrist ratios, such as Idaho, Montana, and Wyoming, have a high ratio of optometrists to ophthalmologists, indicating the importance of the optometrist in providing primary vision care services.

Geographical Disbribution

Optometrists typically are more widely distributed across the states than many health professionals. A recent report to the President and Congress indicates that next to pharmacists, optometrists are the most evenly distributed health professionals.[8]

Of particular concern in this study is the relative distribution of optometrists to ophthalmologists. Ophthalmologists tend to locate near metropolitan areas, close to medical facilities and equipment. In contrast, an optometrist's practice is more self-contained and requires little technical back-up; consequently more optometrists are found in smaller cities, towns, and rural areas.

The Bureau of Health Manpower recently designated eighteen vision care shortage areas in Arizona, California, Colorado, Montana, Nevada, and Utah (these counties are noted in Appendix A). Potentially, other areas in the region qualify for such designations but the current process requires that a specified differential between required and available services exist and that a request for designation be initiated by the community. The existence of shortage areas points out the need for training scholarships, loan forgiveness programs, or other techniques to encourage service in areas of need.

Table 3.2

COMPARISONS OF RATIOS OF OPTOMETRISTS AND AMA LISTED OPHTHALMOLOGISTS FOR WICHE STATES

		Ratio of 1978 Active O.D.s to 100,000 Population, 1978	Ratio of 1976 AMA Listed Ophthalmologists to 100,000 Population, 1976	Ratio Combined O.D.s & Ophthalmologists to 100,000 Population	Ratio of Ophthalmologists to Optometrists
	ALASKA	9.2	2.5	11.7	.27
*	ARIZONA	8.4	5.4	13.8	.64
*	CALIFORNIA	12.5	6.1	18.6	.48
*	COLORADO	9.3	5.5	14.8	.59
*	HAWAII	9.4	5.3	14.7	.56
	IDAHO	12.2	4.6	16.8	.38
	MONTANA	15.1	5.0	20.1	.32
	NEVADA	8.3	4.7	13.0	.56
	NEW MEXICO	7.4	4.3	11.7	.58
*	OREGON	13.6	6.7	20.3	.48
*	UTAH	6.7	5.1	11.8	.76
*	WASHINGTON	9.9	5.3	15.2	.53
	WYOMING	13.0	4.3	17.3	.33
	REGION	11.4	5.7	17.1	.50

SOURCES: 1978 active optometrists--estimated from 1978-79 state licensing board rosters.

1976 ophthalmologists--Physician Distribution and Medical Licensure in the U.S., 1976. Louis Goodman Center for Health Services Research and Development, American Medical Association, Chicago, 1977.

1978 state population--U.S. Bureau of the Census, Series P-25, No. 794, 1979.

1976 state population--U.S. Bureau of the Census, Series P-25, No. 738, 1978.

NOTES: AMA totals of ophthalmologists include board certified and non-certified practitioners.

Combining of ratios from different years assumes that while population and supply may change between 1976 and 1978, the ratio of ophthalmologists to population stays relatively constant for that period.

* State has a residency program in ophthalmology

Table 3.3

COMPARISON OF RATIOS OF OPTOMETRISTS AND BOARD CERTIFIED OPHTHALMOLOGISTS FOR WICHE STATES

	Ratio of 1978 Active O.D.'s to 100,000 Population, 1978	Ratio of 1977-78 Board Certified Ophthalmologists to 100,000 Population, 1978	Ratio of Combined O.D.'s and Ophthalmologists to 100,000 Population	Ratio of Ophthalmologists to Optometrists
ALASKA	9.2	4.2	13.4	.46
*ARIZONA	8.4	5.4	13.8	.64
*CALIFORNIA	12.5	5.3	17.8	.42
*COLORADO	9.3	4.9	14.2	.53
*HAWAII	9.4	4.3	13.7	.46
IDAHO	12.2	3.3	15.5	.27
MONTANA	15.1	4.2	19.3	.28
NEVADA	8.3	4.5	12.8	.54
NEW MEXICO	7.4	3.8	11.2	.51
*OREGON	13.6	5.8	19.4	.42
*UTAH	6.7	4.1	10.8	.61
*WASHINGTON	9.9	4.4	14.3	.44
WYOMING	13.0	3.5	16.5	.27
REGION	11.4	5.0	16.4	.44

SOURCES: 1978 Active Optometrists--estimated from 1978-79 State Licensing Board Rosters.

1977-78 Board Certified Ophthalmologists--Director of Medical Specialists, 1977-78. Does not include non-certified ophthalmologists.

1978 State Population--U.S. Bureau of the Census, Series P-25, No. 794.

*State has residency program in ophthalmology.

The disparities in distribution exist not only between states, as seen in Tables 3.1 and 3.2, but also within each state. The map shown in Figure 3.1 depicts the county-by-county distribution of optometrists as of 1977. Slight changes in the distribution pattern could have occurred since then.

The dense shading of Figure 3.1 indicates counties having the services of both ophthalmologists and optometrists, the medium shading those with at least one optometrist but no ophthalmologist and the unshaded areas those counties with neither service available. The figure includes only ophthalmologists who are board certified. Insufficient current and reliable data were available on the geographical distribution of uncertified ophthalmologists to be included. Our data show no county in the region has an opthalmologist and not an optometrist, and many rural counties have only an optometrist. Many rural areas of the West have no vision care provider.

Another comparison of optometrists and board certified ophthalmologists by numbers and ratios for counties is presented following this report in Appendix A. The tables give an indication of the observed differences in the ratios of practitioners to population across the WICHE counties.

Age Distribution of Optometrists

There was a major surge in the training of optometrists following World War II, followed by a sharp decline in enrollments. The result is that a disproportionate number of optometrists have reached or are approaching retirement age. In 1973, more than 70 percent of the supply of optometrists were over forty years of age (See Table 3.4).

A substantial increase in the number of optometrists below thirty years of age is estimated in Table 3.4 and Figure 3.2. Almost one-fourth of the optometrists in the West now are below thirty years of age, compared with fewer than 10 percent five years earlier. This group of new graduates will gradually offset the losses due to death and retirement.

The uneven age pattern and large variation in age distribution has implications for projections of optometric manpower. Within the next 20-25 years, the majority of the 1973 manpower pool will be leaving active practice due to death and retirement. A large number of new entries will be required to compensate for the expected attrition and for the projected increases in the population of the western United States.

At the same time caution must be exercised, for in seeking to balance a short-term decline in optometrists there is the real possibility of overproducing manpower in the long run.

Sex and Minority Distributions

The profession of optometry typically has been composed of white males. In 1973, only 2.38 percent of all active optometrists in the West were women. Females comprised 4.6 percent of the total number of optometrists in the youngest age group, those under thirty. Thus, while the percent of women in the profession is gradually increasing, there still is a major imbalance between the sexes. Trends in school enrollments, (see Chapter IV) indicate an increase in female enrollments.

DISTRIBUTION OF OPTOMETRISTS AND BOARD-CERTIFIED OPHTHALMOLOGISTS BY COUNTY FOR THE WESTERN REGION

Figure 3.1

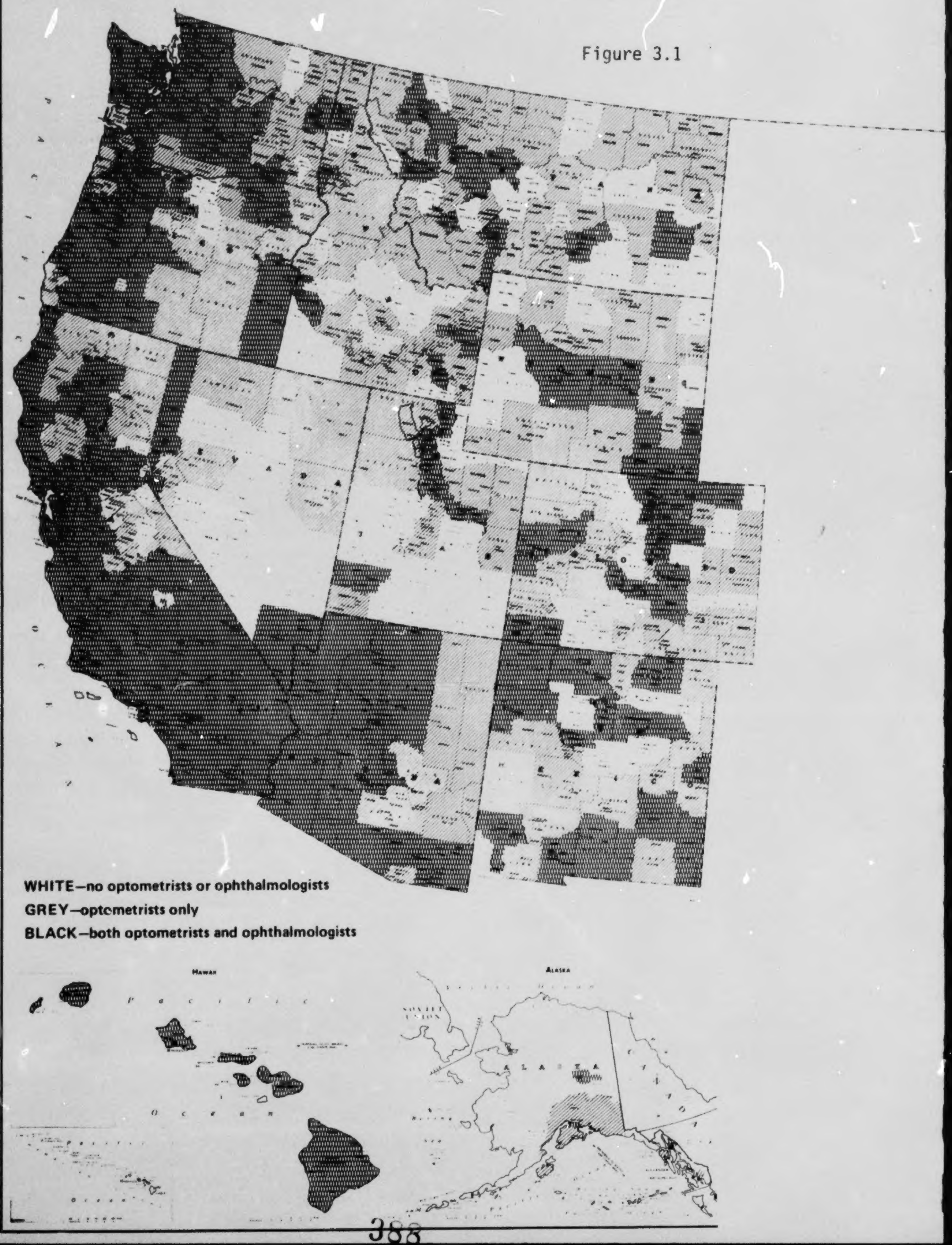

WHITE—no optometrists or ophthalmologists
GREY—optometrists only
BLACK—both optometrists and ophthalmologists
HAWAII
Pacific
Ocean
ALASKA
SOVIET UNION
ALASKA

Table 3.4

COMPARISON OF AGE DISTRIBUTION OF 1973 ACTIVE OPTOMETRIST SUPPLY WITH ESTIMATED AGE DISTRIBUTION OF 1978 ACTIVE OPTOMETRIST SUPPLY BY STATE AND PERCENT

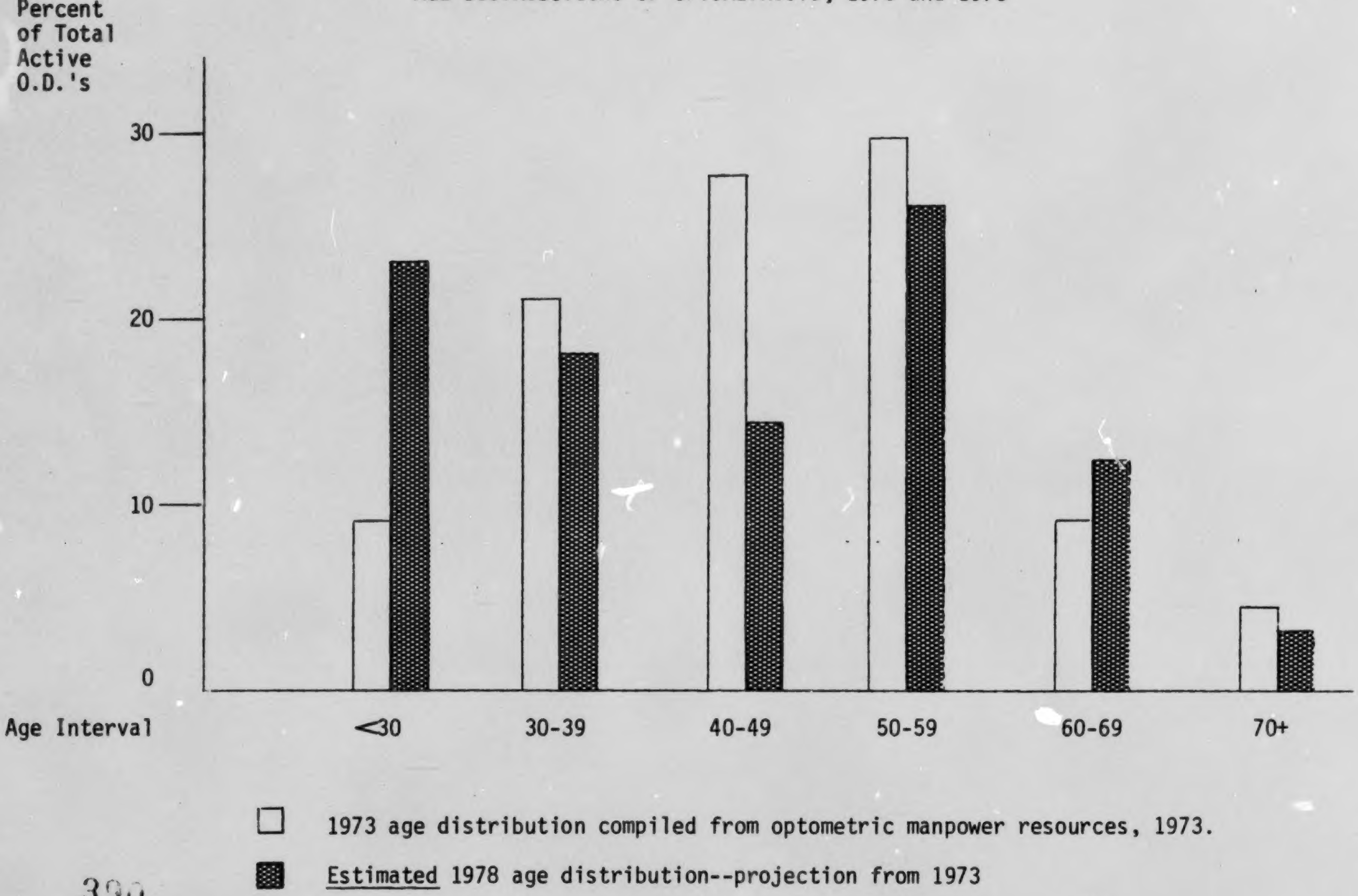
State	Year	<30	30-39	40-49	50-59	60-69	70+
ALASKA	1973	22.2%	33.3%	27.8%	11.1%	5.6%	--%
	1978	55.4	19.1	11.0	10.5	3.2	.6
ARIZONA	1973	8.1	26.9	26.2	25.5	12.8	.7
	1978	33.3	17.0	14.6	21.1	11.3	2.4
CALIFORNIA	1973	9.9	20.2	27.0	30.5	8.7	3.7
	1978	24.3	17.8	14.8	27.0	12.8	3.0
COLORADO	1973	13.5	26.9	28.4	25.5	4.8	1.0
	1978	24.4	23.2	16.9	24.6	9.3	1.2
HAWAII	1973	10.8	21.6	33.8	23.0	10.8	--
	1978	21.6	19.5	17.4	27.4	11.6	2.1
IDAHO	1973	7.1	22.4	30.6	29.4	5.9	4.7
	1978	30.7	15.2	15.1	25.9	10.3	2.5
MONTANA	1973	10.9	24.8	31.7	26.7	5.0	1.0
	1978	23.6	20.4	17.4	27.1	9.9	1.3
NEVADA	1973	18.8	25.0	29.2	20.8	--	6.3
	1978	22.4	27.6	17.2	24.0	6.2	2.2
NEW MEXICO	1973	12.5	27.5	23.8	28.8	6.3	1.3
	1978	20.6	24.0	16.8	25.1	11.5	1.7
OREGON	1973	6.2	19.7	26.2	32.1	11.5	4.3
	1978	20.9	15.4	15.2	28.9	15.3	3.9
UTAH	1973	2.7	16.0	33.3	30.7	10.7	6.7
	1978	27.7	9.7	14.8	29.7	13.5	4.3
WASHINGTON	1973	8.3	16.6	28.8	30.7	12.5	3.1
	1978	10.9	17.6	16.7	33.2	17.2	4.2
WYOMING	1973	7.5	32.5	22.5	27.5	7.5	2.5
	1978	35.4	18.3	14.9	19.6	9.6	1.9
REGION	1973	9.6	20.9	27.5	29.7	9.0	3.3
	1978	23.8	18.0	15.2	27.0	12.7	2.9

SOURCES: 1973 age distributions taken from Optometric Manpower Resources, 1976. BHM, HRA, DHEW, 1976.

1978 estimated distributions computed by shifting 5-year intervals, applying attrition rates, and adding new practitioners into <30 age group.

Figure 3.2

AGE DISTRIBUTIONS OF OPTOMETRISTS, 1973 and 1978



Ethnic minorities comprise about 22 percent of the population of the western states, including large Hispanic populations in the Southwest and California, Native American groups in the Southwest and Northwest, and numbers of Blacks and Asian Americans in California.

Yet, with the exception of Asian Americans, minority groups are greatly under-represented in the optometry profession. Excluding optometrists of Asian American background, minorities made up less than 1 percent of the 1973 supply of active optometrists in the region. Asian Americans, on the other hand, are well represented in the profession.

Table 3.5 illustrates the disparity for specific ethnic groups in the region while Table 3.6 shows an equally disproportionate situation in California, the state with more than one-half of the region's optometrists as well as some of the heaviest concentrations of minority groups.

The divergence between the makeup of the profession and the number of minority persons in the population raises questions about how well the vision care needs of some minorities are being met (see Chapter II).

Summary

There are approximately 4,579 active optometrists in the thirteen western states, resulting in a regional average ratio of 11.4 optometrists for every 100,000 population. That ratio is slightly better than the 10.7 ratio five years earlier.

In spite of this improved ratio, there clearly is a maldistribution of optometrists in the region. State ratios for 1978 range from a low of 6.7 per 100,000 in Utah to a high of 15.1 in Montana. Within specific states, optometrists are more widely distributed than ophthalmologists, but there are still areas of the West without the services of either profession.

Five to ten years ago the age distribution of optometrists was skewed to the more aged end due to the post-World War II training bulge. The age distribution is now bi-modal. While there will be increased attrition with the next twenty years, planners must take care not to create a situation that would eventually lead to an over-production of manpower.

Finally, the number of female and minority group optometrists is small and completely disproportionate to those segments of the population. Trends show some improvement in this situation but it appears some time will pass before a balance is achieved.

Table 3.5

COMPARISON OF MINORITY OPTOMETRISTS IN 1973 WITH PERCENTAGE OF MINORITIES IN POPULATION OF REGION

Race/Ethnicity	Percent of Active O.D.'s 1973	Percent in WICHE Region Population
Black	.3% (n=10)	5.3%
Hispanic	.4% (n=15)	12.4%
Native American	.1% (n=4)	1.2%
Asian & Pacific Americans	6.6% (n=265)	3.1%

SOURCES: Optometrists--Optometric Manpower Resources, 1973.

Minority Population Ratios--Access and Retention of Minorities in Higher Education, WICHE, October 1978; and U.S. DHEW Survey of Income and Education, 1976.

Table 3.6

COMPARISON OF MINORITY OPTOMETRISTS IN 1973
WITH PERCENTAGE OF MINORITIES IN CALIFORNIA POPULATION

Race/Ethnicity	Percent of Active O.D.'s 1973	Percent in State Population
Black	.29% (n=7)	7.74%
Hispanic	.46% (n=11)	15.84%
Native American	.04% (n=1)	.51%
Asian & Pacific Americans	7.3 (n=176)	3.73%

SOURCES: Optometrists--Optometric Manpower Resources, 1973.

Population--State of California, Department of Finance, estimates for 1976.

FOOTNOTES

Chapter III

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4. Goodman, Louis. Physician Distribution and Medical Licensure in the United States, 1976. Center for Health Services Research and Development, American Medical Association, Chicago, 1977.

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Chapter IV

ENTRIES TO AND EXITS FROM THE MANPOWER POOL

Enrollments

The major factor in determining the future supply of optometric manpower is the enrollment capability of the schools of optometry in the United States. There are currently thirteen schools distributed over the country with three of these located in the WICHE region. A list of all the schools along with enrollments as of 1978-79 is presented in Table 4.1. The three WICHE region schools are Pacific University College of Optometry in Oregon, Southern California College of Optometry in Fullerton, California, and the University of California School of Optometry in Berkeley. The first two schools are private. The University of California at Berkeley is public and admits mostly California students.

Applications

Applications to schools of optometry have outnumbered available openings. For academic year 1974-75, about 14 percent of all applicants were accepted into schools of optometry. Within the WICHE region, 22 percent were accepted.[1] The number of students accepted from a particular state depends on several factors including whether the state has a school, the existence of regional exchange programs or contractual arrangements between states and schools, and changes in the qualified applicant pool related to shifts in the general population and interstate migration.

There has been a trend over the past few years of decreased applications. The combined number of applications to Pacific University and the Southern California College of Optometry in 1977-78 was at 87 percent of the level for 1975-76. Likewise, the number of individuals taking the Optometry College Admission Test (OCAT) nationally was at 87 percent of the 1975-76 level. The same trend is seen in applications in other health professions such as medicine and dentistry.

As noted above, about one in five applicants were accepted into the three WICHE schools in 1974-75. However, for the two private schools the 1974-75 data show one in nine applicants accepted and the decline in number of applicants has changed this to one in eight. At the same time the average level of pre-professional education of the total applicant pool has been increasing. Thus, it appears that the reduction in number of applicants has eliminated primarily the lesser-qualified of those applying the earlier period.

Characteristics of Applicants

Characteristics of applicants to schools of optometry have been described in a recent study by Levine.[2] Selected findings include the following:

- Over half of the applicants spent their youth in a suburban environment.

Table 4.1

SCHOOLS AND COLLEGES OF OPTOMETRY IN THE UNITED STATES AND ENROLLMENTS AS OF 1978-79

School	Total Enrollment	1st	2nd	3rd	4th
TOTAL	4,436	1,181	1,129	1,070	1,056
U. of Alabama	150	41	44	32	33
*Southern California College of Optometry	387	96	94	94	103
*U. of California, Berkeley	261	68	63	63	67
Illinois College of Optometry	592	157	145	146	144
Indiana U., Division of Optometry	266	69	67	62	68
New England College of Optometry	351	96	84	84	87
Ferris State U., Michigan	99	30	27	22	20
State U. of New York, College of Optometry	221	71	58	53	39
Ohio State U., College of Optometry	230	61	59	55	55
*Pacific U., College of Optometry	329	84	83	76	86
Pennsylvania College of Optometry	572	150	153	141	128
Southern College of Optometry	589	151	152	143	143
U. of Houston, College of Optometry	389	107	100	99	83

SOURCE: Council on Optometric Education, Annual Survey of Optometric Educational Institutions, 1978-79.

*Schools located in WICHE region.

- Most applicants were white males, although the percentage decreased from 87 to 77 percent during the past five years.

- Most applicants had their previous academic training in biology, math or science.

- While only a small percentage of applicants were directly related to an optometrist, approximately 40 percent felt that an optometrist was the major influence in their career choice.

- Nearly 85 percent of applicants stated their major reason for choosing optometry as a profession was either to work with people or because of the content of the profession.

- For more than a third of the applicants, the parent's annual income was $20,000 or more. This amount has tended to increase over the past years, most likely as a product of inflation.

- The number of applicants expecting loans or scholarships rose from 55 to 65 percent over the past five years.

The last finding points out the financial concerns surrounding optometric education. The cost of education has risen sharply resulting in an increased financial need of students, especially those from lower income families. At the same time there has been a reduction in the funding of scholarship and grant programs. Currently, the major source of financial aid appears to be loans at an increasing rate of interest.[3]

Attrition from Optometry Programs

The proportion of students who leave optometric training programs varies among schools. While figures as high as 12 percent attrition have been quoted, the rates for the WICHE region schools are considered low, with an average of about 2 percent. Schools are now placing an emphasis on remedial programs to help retain students who are in academic difficulty and thereby reduce attrition.[4]

Geographical Location of Training

While there are thirteen schools of optometry in the United States, it appears that the optometric education of students from the WICHE region is increasingly concentrated in the schools within the region. In 1977-78, over 90 percent of first year optometry students from WICHE states were enrolled in the western schools (see Table 4.2). Excluding the states which have schools (California and Oregon), the percent enrolled within the region has increased from 70 percent to 92 percent in five years.

While over 90 percent of WICHE residents are attending WICHE region schools, they are not totally filling the enrollment capabilities of those schools. Tables 4.3 and 4.4 indicate that with the exception of the University of California which takes mostly California students, the percentage of openings taken by WICHE residents varies from 65 to 75 percent. The 10 percent of WICHE students who attend school outside of the region have little impact on the enrollment capabilities of those schools, accounting

Table 4.2

TRENDS IN GEOGRAPHICAL LOCATIONS WHERE WICHE STUDENTS ATTEND OPTOMETRY SCHOOL

	Percent of 1st-Year Optometry Students from WICHE Region Enrolled in WICHE Region Schools	
	1972-73	1977-78
All WICHE States	88.4%	91.2%
WICHE States Excluding California & Oregon	70.1%	91.8%

SOURCES: Enrollments--American Optometric Association. Annual Report to House of Delegates, selected years.

NOTE: California and Oregon have schools of optometry.

Table 4.3

FIRST YEAR WICHE STATES OPTOMETRY

STUDENT ENROLLMENTS, 1977-78

State	Pacific U. College of Optometry	Southern California College of Optometry	U. of California Berkeley School of Optometry	Out-of-Region Schools	Total All U.S. Schools
ALASKA	1	0	0	1	2
ARIZONA	3	7	0	0	10
CALIFORNIA	14	26	57	11	108
COLORADO	8	4	0	2	14
HAWAII	3	1	1	1	6
IDAHO	3	2	0	0	5
MONTANA	8	6	0	0	14
NEVADA	3	4	0	0	7
NEW MEXICO	2	2	0	3	7
OREGON	10	2	0	0	12
UTAH	3	3	0	0	6
WASHINGTON	8	4	0	0	12
WYOMING	1	2	0	0	3
	67	63	58	18	206
Percent of Schools 1st-Year Enrollment Taken by Students from WICHE Region	74.7%	65.6%	89.2%	2.0%	18.0%

SOURCE: American Optometric Association--Annual Report to House of Delegates, 1978.

Table 4.4

FOUR YEAR WICHE STATES OPTOMETRY

STUDENT ENROLLMENTS, 1977-78

State	Pacific U. College of Optometry	Southern California College of Optometry	U. of California Berkeley School of Optometry	Out-of-Region Schools	Total All U.S. Schools
ALASKA	3	1	0	2	6
ARIZONA	8	17	1	4	30
CALIFORNIA	34	124	229	31	418
COLORADO	16	16	0	5	37
HAWAII	11	8	4	6	29
IDAHO	10	6	0	1	17
MONTANA	19	14	1	5	39
NEVADA	7	11	1	0	19
NEW MEXICO	5	14	2	9	30
OREGON	45	7	0	2	54
UTAH	10	11	0	3	24
WASHINGTON	47	13	0	4	64
WYOMING	8	11	0	2	21
	223	253	238	74	788
Percent of Schools Enrollment Taken By Students from WICHE Region	67.7%	63.5%	92.2%	2.2%	18.7%

SOURCE: American Optometric Association--Annual Report to House of Delegates, 1978.

for only 2 percent of their enrollments. The WICHE schools took sixty-three entering students from outside the region while only eighteen students from the region attended schools outside the region.

Female and Minority Enrollments

As cited earlier in this report, the percentage of female optometrists has been very low, less than 3 percent of the supply of active optometrists in 1973. Recent enrollments show that the proportion of female students is increasing (see Table 4.5). Pacific University and Southern California College of Optometry have increased their acceptance of female students during each of the last three years. The University of California at Berkeley has maintained a relatively high but constant ratio over the same time period. Overall, the most recent enrollments contain about 22 percent women, somewhat above the national enrollment average of 19.8 percent. It will, however, be sometime until these increasing enrollments will be reflected in numbers of practicing optometrists.

While female enrollments are improving the same gains are not shown for minorities. Table 4.6 shows that although the enrollment ratios have improved over the practice proportions in 1973, they are in no way comparable to the proportions of the minority population. The percentage of Blacks, Hispanic, and Native Americans in the WICHE population is over four times the enrollment percentages of these groups.

The under-representation of minorities exists in California alone as shown in Table 4.7. California is a major influence in the regional situation as it contains over half of the region's optometrists and a large number of minority individuals. It should be noted that the percentages shown for Southern California College of Optometry in Table 4.7 are based on total students whereas only about one-third of those students are Californians.

In both the region and California, there is an under-representation of Blacks and Hispanic individuals enrolled in programs of optometry. However, there is a strong representation of persons of Asian background in the profession, both as practitioners and as students. The result of this type of distribution is that often when Asians are included in minority counts the profession takes on the appearance of more fairly representing the minority populations.

Table 4.8 shows percentages of three minority groups and of women in the enrollments of schools of optometry, dentistry, and medicine. While the data are not entirely consistent as to time and classes included, it appears that enrollments in schools of dentistry and medicine show significantly greater percentages of minorities than do enrollments in schools of optometry. Schools of medicine show nearly twice the percentage of females shown by schools of optometry and dentistry; however, Table 4.5 indicates a significant increase in this percentage for optometry, in the most recent entry class.

Educational Opportunity

Educational opportunity reflects access that students have to schools. The educational opportunity in optometric education will vary across the

Table 4.5

PERCENTAGE FEMALE ENROLLMENT IN WICHE OPTOMETRY SCHOOLS, 1977-78

	Percentage Female			
School	1st Year	2nd Year	3rd Year	4th Year
Pacific University, College of Optometry	24.7% (n=21)	16.6%	8.1%	8.9%
Southern California College of Optometry	22.9% (n=22)	12.7%	6.7%	5.7%
University of Califonria, Berkeley	20.0% (n=13)	20.6%	20.8%	31.7%
WICHE Average	22.7% (n=13)	16.1%	10.8%	13.4%
U.S. Average	19.8% (n=226)	14.9%	13.2%	12.8%

SOURCE: Enrollments--American Optometric Association, Annual Report to House of Delegates, 1978.

1973 Supply--Optometric Manpower Resources, 1973.

NOTE: Percent female in 1973 WICHE active optometric supply = 2.38% (n=95)

Table 4.6

COMPARISON OF MINORITY ENROLLMENT IN WICHE SCHOOLS OF OPTOMETRY WITH PERCENTAGE ACTIVE MINORITY OPTOMETRISTS IN WICHE REGION (1973) AND PERCENTAGE MINORITY IN WICHE POPULATION

Race/Ethnicity	Percent of Active WICHE O.D.'s, 1973	Percent in WICHE Region Population, 1976	Percent Enrolled in Three Optometry Schools In WICHE Region, 1977-78
Black	.3% (n=10)	5.3%	1.2% (n=12)
Hispanic	.4% (n=15)	12.4%	2.7% (n-27)
Native American	.1% (n=4)	1.2%	.2% (n=2)
Asian American	6.6% (n=265)	3.1%	11.5% (n=113)

SOURCES: Optometrists--Optometric Manpower Resources, 1973.

Minority Population Ratios--Access and Retention of Minorities in Higher Education, WICHE, 1978, and U.S. Dept. of Health, Education, and Welfare Survey of Income and Education, 1976.

Enrollments--American Optometric Association, Report to the House of Delgates, June 20, 1978.

Table 4.7

COMPARISON OF MINORITY ENROLLMENT IN CALIFORNIA OPTOMETRY SCHOOLS WITH PERCENTAGE OF MINORITIES IN STATE OF CALIFORNIA POPULATION

	Percent of Total Enrollment			
Race/Ethnicity	SCCO (398)	UCB (258)	Two Schools Combined (656)	Percent Minority in State Population
Black	.50%	3.48%	1.67%	7.74%
Hispanic	2.51%	5.81%	3.81%	15.84%
Native American	.50%	0.00%	.77%	.51%
Asian American	9.04%	21.70%	14.02%	3.73%

SOURCES: School Enrollments--American Optometric Association Report to the House of Delegates, June 20, 1978.

Population--State of California, Department of Finance, Population Research Unit. Estimates for 1976.

Table 4.8

COMPARISON OF U.S. ENROLLMENTS OF FEMALES AND MINORITIES BETWEEN SCHOOLS OF OPTOMETRY, DENTISTRY, AND MEDICINE

School	Blacks	Percent Mexican/ American	Enrolled American Indian	Women
All U.S. Optometry Schools--4 Year Enrollments, 1976-77 (Total = 4,033)	2.2	1.1	.1	13.4
All U.S. Dental Schools--1st Year Enrollments, 1975-76 (Total = 5,763)	5.2	1.1	.4	12.2
All U.S. Medical Schools--1st Year Enrollments, 1975-76 (Total = 15,365)	6.2	1.4	.3	23.7

SOURCES: Optometry--American Optometric Report to House of Delegates, June 1977.

Dental Schools--Annual Report on Dental Education, 1975-76, Division of Educational Measurements, Council on Dental Education, American Dental Association.

Medical Schools--Medical School Admission Requirements 1979-80, Association of American Medical Colleges.

NOTE: Data are presented for different periods of time depending on availability sources.

WICHE states. Two methods of inspecting the degree of access to education are presented in Table 4.9.

The left side of the table indicates the ratio of optometry students enrolled in the entering class from specific states relative to the population of the resident state. Low ratios indicate low access relative to population and vice versa. From the table, it is seen that states such as Alaska, Arizona, and Colorado have relatively low opportunity as compared to states like Montana and more recently, Wyoming. Regionally, student access to optometric education is slightly above the national average. This figure however represents a relative decline in access since the earlier comparison period. Part of this relative drop is no doubt related to major increases in the region's population due to in-migration.

The right side of the table presents ratios of entering-class optometry students to the number of bachelor's degrees granted in the resident state. The data reinforce the previous findings that states such as Arizona and Colroado are relatively low in educational opportunity while Montana and Wyoming are high. Also supported is the fact that the region-wide access has declined slightly relative to the national average.

One other finding illustrated in Table 4.9 is that the relative access for the states without schools of optometry has improved. Relative to population for instance, the eleven WICHE states without schools have recently enrolled relatively more students than the two states with schools. Relative to bachelor's degrees granted, the two states with schools, the eleven states without schools, and the nation all share the same ratio.

One method by which educational opportunity has been improved has been the WICHE Professional Student Exchange Program which serves to place students from states without schools into available openings in the region's three schools. The home state makes a cost-of-education payment to the school and the student receives preference for admission and pays reduced tuition. Table 4.10 illustrates the numbers of optometry students enrolled through the exchange program. This program is one example of how a regional approach can be used to improve educational opportunity.

Optometrist Mobility

In a state-by-state or regional analysis, interstate migration plays a major role in determining the supply of manpower and cannot be ignored. Mobility among states occurs in two forms: 1) the relocation of recent graduates of schools of optometry prior to establishing a practice; and 2) the relocation of optometrists who have previously practiced in other states.

Inspection of state licensing data in a limited number of states has shown that the largest amount of interstate migration can be explained through the relocation of recent graduates. Often, recent graduates will settle in the state where they attended school or in a nearby state. Mobility related to optometrists who previously had practiced elsewhere is limited, except in some "retirement" states.

Projections of future manpower supply for the WICHE states are enhanced if estimates of migration and student relocation patterns can be made.

Table 4.9

EDUCATIONAL OPPORTUNITY: RATIOS OF WICHE STUDENTS ENROLLED IN U.S. OPTOMETRY SCHOOLS TO POPULATION AND TO BACHELORS DEGREES GRANTED BY HOME STATE

State	Enrollment in Entering Class Per 100,000 Population		Enrollment in Entering Class Per 100 Bachelors Degrees Granted in the State	
	1970-72	1975-77	1970-72	1975-77
ALASKA	.63	.40	.77	.33*
ARIZONA	.29	.35	.08	.09
COLORADO	.40	.38	.09	.07
HAWAII	.16	.82	.06	.20
IDAHO	.40	.51	.12	.15
MONTANA	1.03	1.27	.22	.26
NEVADA	1.29	.86	.94	.37*
NEW MEXICO	.50	.71	.15	.17
UTAH	.51	.54	.07	.07**
WASHINGTON	.37	.45	.10	.10
WYOMING	.29	1.61	.22	.50
11 STATES COMBINED	.46	.57	.11	.12
CALIFORNIA	.57	.45	.19	.12
OREGON	.34	.57	.08	.13
2 STATES COMBINED	.55	.47	.18	.12
ALL WICHE STATES COMBINED	.52	.50	.15	.12
TOTAL UNITED STATES	.44	.49	.12	.12

SOURCES: First Year Enrollments--Association of Schools and Colleges of Optometry

Population--U.S. Census Estimates, Series P-25, No. 734

Bachelors Degrees--1970-72, average of 1967-68 and 1969-70; 1975-77, average of 1974-75, 1975-76 and 1976-77.

*Alaska and Nevada bachelor degree production is low relative to state population.

**Utah bachelor degree production is high relative to state population.

Table 4.10

COMPARISON OF WICHE PROFESSIONAL STUDENT EXCHANGE PROGRAM (PSEP) OPTOMETRY STUDENT ENROLLMENTS WITH TOTAL OPTOMETRY STUDENT ENROLLMENTS FROM WICHE STATES

1977-78

State	Pacific U. College of Optometry		Southern California College of Optometry		U. of California Berkeley School of Optometry		Total of Three Schools	
	PSEP	Total WICHE	PSEP	Total WICHE	PSEP	Total WICHE	PSEP	Total WICHE
ALASKA	3	3	1	1	0	0	4	4
ARIZONA	7	8	16	17	0	1	23	26
CALIFORNIA	0	34	0	124	0	229	0	387
COLORADO	0	16	0	16	0	0	0	32
HAWAII	9	11	8	8	3	4	20	23
IDAHO	10	10	6	6	0	0	16	16
MONTANA	19	19	14	14	1	1	34	34
NEVADA	6	7	11	11	0	1	17	19
NEW MEXICO	4	5	14	14	2	2	20	21
OREGON	32	45	6	7	0	0	38	52
UTAH	1	10	9	11	0	0	10	21
WASHINGTON	32	47	11	13	0	0	43	60
WYOMING	1	8	1	11	0	0	2	19
TOTALS	124	223	97	253	6	238	227	714

SOURCES: American Optometric Association--Annual Report to House of Delegates, 1978; and WICHE Student Exchange Report, November 1977.

NOTES: Colorado began sending students through PSEP in academic year 1978-79.

Except for two 4th-year students, Wyoming students at Pacific and SCCO are supported through bilateral contracts between Wyoming and those schools, not through the Professional Student Exchange Program.

60

Obtaining the necessary data to make the best estimates for every state requires a data collection involvement beyond the scope of this report. However, a limited amount of data was made available to the project which served as some basis for understanding mobility patterns and enhancing projections. The following two types of data were used:

1. Alumni data from Pacific University and the Southern California College of Optometry. These data were combined to give estimates of where students came from, and where they practiced following graduation. Records were made available for the period 1974 to 1978. Based on these alumni data estimates of the rate at which students return to their home states and the numbers of students moving into other states could be determined. Subsequently, student return rates were incorporated into the projections of future optometric manpower for each of the WICHE states.

2. Licensing data including location of the high school from which the individual graduated. These data were made available through the cooperation of the state licensing boards and the state optometric associations. Based on these data, estimates could be made of the proportion of the active optometrist supply in the three states who had migrated into those states. The proportions were then used to indicate the effects of interstate migration on the manpower supply in each state and to check against independent estimates of migration derived as part of the projection method.

Specific Questions

The specific questions addressed through these data were:

1. What is the expected direct return rate for students from the WICHE states?

2. What is the overall net return for the WICHE states when nonresidents are included as returns to the state?

3. What proportion of the current optometrist supply in selected WICHE states were originally nonresidents of the state in which they now practice?

4. Of the nonresidents, how many were originally from outside of the WICHE region?

Findings

Based on the alumni data provided by the two schools of optometry, two sets of proportions were computed. The first set represents the direct return rate of students from a given state who return to their home state. The second set represents the overall return proportion which is determined by the number of graduates of the two schools who locate in a state including former residents of other states, compared to the original number sent to the two schools from the given state. If the proportion is greater than 1.0, the state has a net gain of graduates. If less than 1.0, the state has a net loss of graduates. The sets of proportions are reported in Table 4.11.

Table 4.11

STUDENT RETURN RATES ESTIMATED FROM PACIFIC UNIVERSITY COLLEGE OF OPTOMETRY AND SOUTHERN CALIFORNIA COLLEGE OF OPTOMETRY ALUMNI DATA

1974-78

	Proportion of Students From State Who Return	Overall Net Return Proportion Including Graduates From Other States
ALASKA	.75	2.50
ARIZONA	.66	1.66
CALIFORNIA	.92	1.11
COLORADO	.66	1.06
HAWAII	1.00	1.16
IDAHO	.85	1.09
MONTANA	.59	.59
NEVADA	.66	.93
NEW MEXICO	.89	1.33
OREGON	.59	1.52
UTAH	.52	.60
WASHINGTON	.64	.94
WYOMING	.70	1.00

SOURCE: Alumni records for graduates 1974-78 from Pacific University College of Optometry and Southern California College of Optometry.

The direct return rates are incorporated into the projection method and discussed in greater detail in Chapter V.

Table 4.12 reports the percentages of optometrists for California, Colorado, and Wyoming according to former residency based on where the individual graduated from high school. The California percentages are based on optometrists licensed since 1973, Colorado since 1972, and Wyoming includes the total current roster of licensed optometrists.

California has the highest percentage of native optometrists which can be related to the fact that there are two schools of optometry within the state and one of those schools is a public institution that enrolls mostly state residents. Interestingly, the large proportion of those who have migrated into California are from outside of the WICHE region. Many of these individuals have come from other parts of the United States to attend school at Southern California College of Optometry and located in the state following graduation.

Colorado appears to have less than 40 percent of its recent supply of optometrists who graduated from high school in the state. Just over 24 percent have migrated to the state from other WICHE states while approximately 36 percent have come from elsewhere. Many of the persons from outside of the region tend to come from the states of Nebraska and Kansas which border Colorado on the east.

Wyoming has a slightly higher proportion of practitioners originating there than does Colorado. Until recently, there has not been the in-migration trend into Wyoming as there was in Colorado. With recent economic changes in Wyoming, migration patterns are likely to change.

Mobility patterns may reflect state licensing laws and the scope of optometry practice allowed in a state, whether the state's board facilitates in-migration, the status of optometry as a profession, the state's per capita income, and the quality of life available.

While there are variations in the percentages of optometrists migrating into the states reviewed, it is clear that the effect of migration is a major determinant of optometric manpower in these states. Any projection of supply should include consideration of migration as such a determinant.

Attrition from the Profession

Generally, there is no evidence to suggest that optometrists live longer than the general white male population. There is evidence, however, that retirement patterns among optometrists may differ and that optometrists tend to work into the later years. For these reasons, the attrition methodology used for the projections in this report was based on the use of mortality statistics for the general white male population and retirement proportions based on the activity data compiled in the 1973 American Optometric Association Optometric Manpower Survey.

Data Sources for this Chapter

Several sources of data were utilized within this chapter. The majority of enrollment information was provided by the American Optometric Association and the Association of Schools and Colleges of Optometry. Data

Table 4.12

PERCENT DISTRIBUTION OF O.D. SUPPLY BY HIGH SCHOOL LOCATION FOR THREE WICHE STATES

Practice State	Attended High School in Practice State	Attended High School in Other WICHE State	Attended High School Outside of Region
CALIFORNIA	65.5%	6.4%	27.8%
COLORADO	39.4%	24.4%	36.1%
WYOMING	49.0%	15.6%	35.2%

NOTES: California percentages based on supply licensed in 1972 and after (n=812)

Colorado percentages based on supply licensed 1972 and after (n=104)

Wyoming percentages based on total supply (n=51)

High school location used as indication of former residence.

on the characteristics of optometry students came from the published article by Levine as cited. Other enrollment and student data were provided by the three schools of optometry located within the WICHE region, as were data on alumni. These alumni data were used in the migration estimates. Data on medical school enrollments were published by the Association of American Medical Colleges, and similar data on dental school enrollments by the American Dental Association. Population and minority data were provided by the U.S. Census Bureau and previous WICHE reports.

Additional sources of migration data were the Colorado and California Optometry Licensing Boards, and the Wyoming Optometric Association.

Summary

While there are thirteen schools of optometry in the nation, the majority of students from the WICHE region are currently being trained in one of the three schools within the region. Most students from outside of California attend either Pacific University or Southern California College of Optometry, while the University of California at Berkeley trains a large number of California students. Applications to schools of optometry seem to be on a decline, but the ratio of applicants to openings is still high and there is evidence that applicants may be better qualified and have higher levels of pre-optometric education.

While the percentage of female enrollments seems to be improving, the same does not hold true for Blacks, Hispanics, and Native Americans. The proportion of these minority groups enrolled is consistently well below the proportion in the population.

Educational opportunity varies from state to state though it appears that, on the average, students from states without schools of optometry have equivalent access to students from states with schools. The WICHE Professional Student Exchange Program has provided a regional mechanism for improving educational opportunity.

The distribution of optometric manpower is not only influenced by enrollments, but also by the migration patterns of both practicing optometrists and more so the location decisions of recent graduates. As a whole, the WICHE region tends to acquire graduates who were prior residents of states outside of the region. Within the region, graduates seem to prefer certain states in which to begin practice (e.g., California, Oregon, and Montana).

While the region gains manpower as a result of locating decisions of new graduates and in-migration, there is little loss of existing manpower due to out-migration. Losses of manpower typically come from death and retirement. Optometrists can be expected to practice for longer periods of time than most other individuals. The combined information about enrollment capacities and trends, migration, and attrition is all essential in projecting future optometric manpower for the WICHE region.

FOOTNOTES

Chapter IV

1. Seitz, Larry A. Optometric Services in the Thirteen WICHE States: A Study of Current and Projected Supply and Demand. WICHE, Boulder, Colorado, 1976.

2. Levine, Nira R. "Characteristics of Applicants to Schools and Colleges of Optometry--1971-72 to 1977-78." Journal of Optometric Education, Vol. 4, No. 2, 1978. pp. 8-14.

3. Heilberger, Michael and Mort Soroka. "Optometric Shortage Areas--Changes in Federal Policy." Journal of Optometric Education, Vol. 4, No. 2, 1978. pp. 15-17.

4. U.S. Dept. of Health, Education, and Welfare, Bureau of Health Manpower. Supply of Optometrists in the United States. DHEW Publication No. (HRA) 79-18, 1978.

Chapter V

MANPOWER PROJECTION METHODOLOGY

Projecting the future supply of manpower involves a methodological process filled with uncertainties. The numbers projected should not be considered hard facts; rather, they represent the supply which will probably exist in the future, given some set of assumptions. Furthermore, the success of any projection methodology depends on the quality of available data, and the rationality of the assumptions made.

Projection models (diagrams which represent how variables interrelate) vary greatly in their complexity. Simple models use few variables and require a minumum of data; however, they also ignore many factors which may significantly influence supply. Complex models account for more factors, but require data which may often be unreliable or unavailable.

State Versus National Projections

The projection of the national supply of optometric manpower can be accomplished through the use of a relatively simple model that can be called a closed system model. This model can be appropriately used in making a projection of manpower supply for the nation as a whole. When one looks at the nation, as opposed to a state or region, it is not necessary to take into account the shifts in manpower and population between states within the nation. The closed system model does not have to consider where students attend school and where they eventually locate and practice. Essentially, this model ignores geographical distribution and migration. The major information needed to project the supply of manpower for the nation, using this model, are: 1) current supply of practicing optometrists; 2) total enrollment capacity of all the nation's schools, and 3) predictions of the rates optometrists will be leaving the pool due to death and retirement (see Figure 5.1). This simple model is not appropriate if one wishes to gain an accurate projection for individual states or for a region.

The migration of optometrists can greatly affect the manpower supply in an individual state. Simply looking at the number of students enrolled from a state could lead to a very wrong projection of the manpower supply that a state will have in the future. Few of these students enrolled may actually return to that state to practice. Or a state with an optometry school may experience a very high rate of in-migration because of a large number of out-of-state students who remain to practice after graduation.

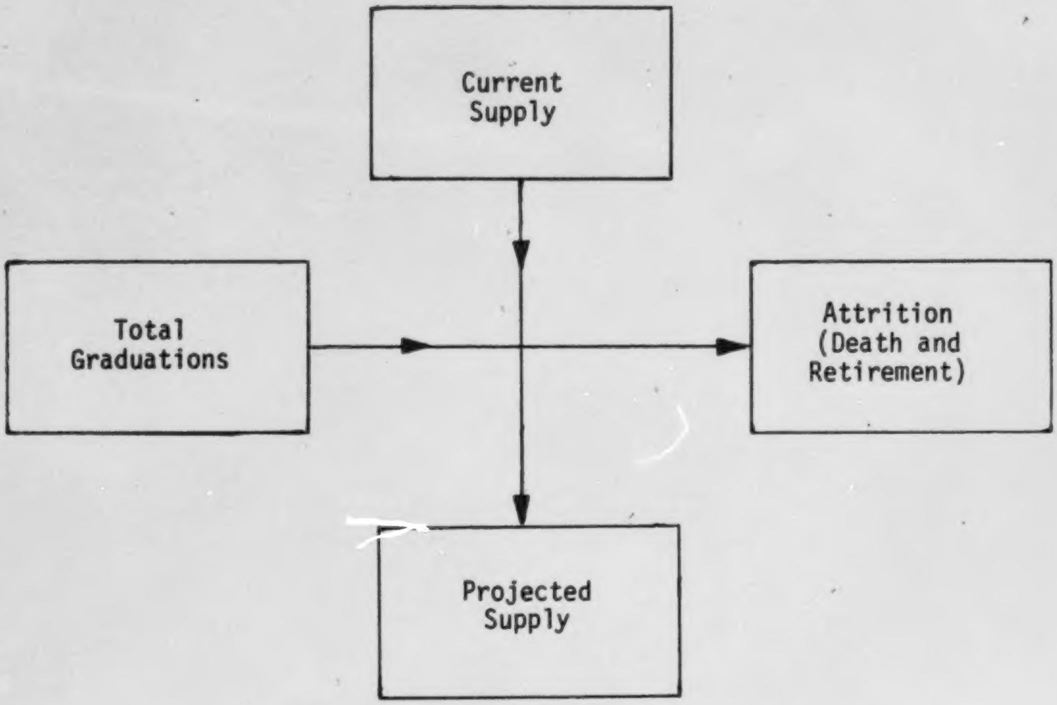
More accurate projections for the western states and the WICHE region may be generated from an open system model (see Figure 5.2). This expanded model is more complex and requires more data. Ideally, one would like to know exactly how many new graduates were locating in a particular state and from which schools they had graduated. Additionally, one would desire to know in which states the new graduates had resided previously. It would be important to know the rate at which students returned to practice in each state, and the migration patterns of older optometrists.

Unfortunately all of the data required to fit this model are unavailable. Furthermore, the contract under which this work was done prohibited

Figure 5.1

SIMPLE PROJECTION MODEL USED FOR AGGREGATED

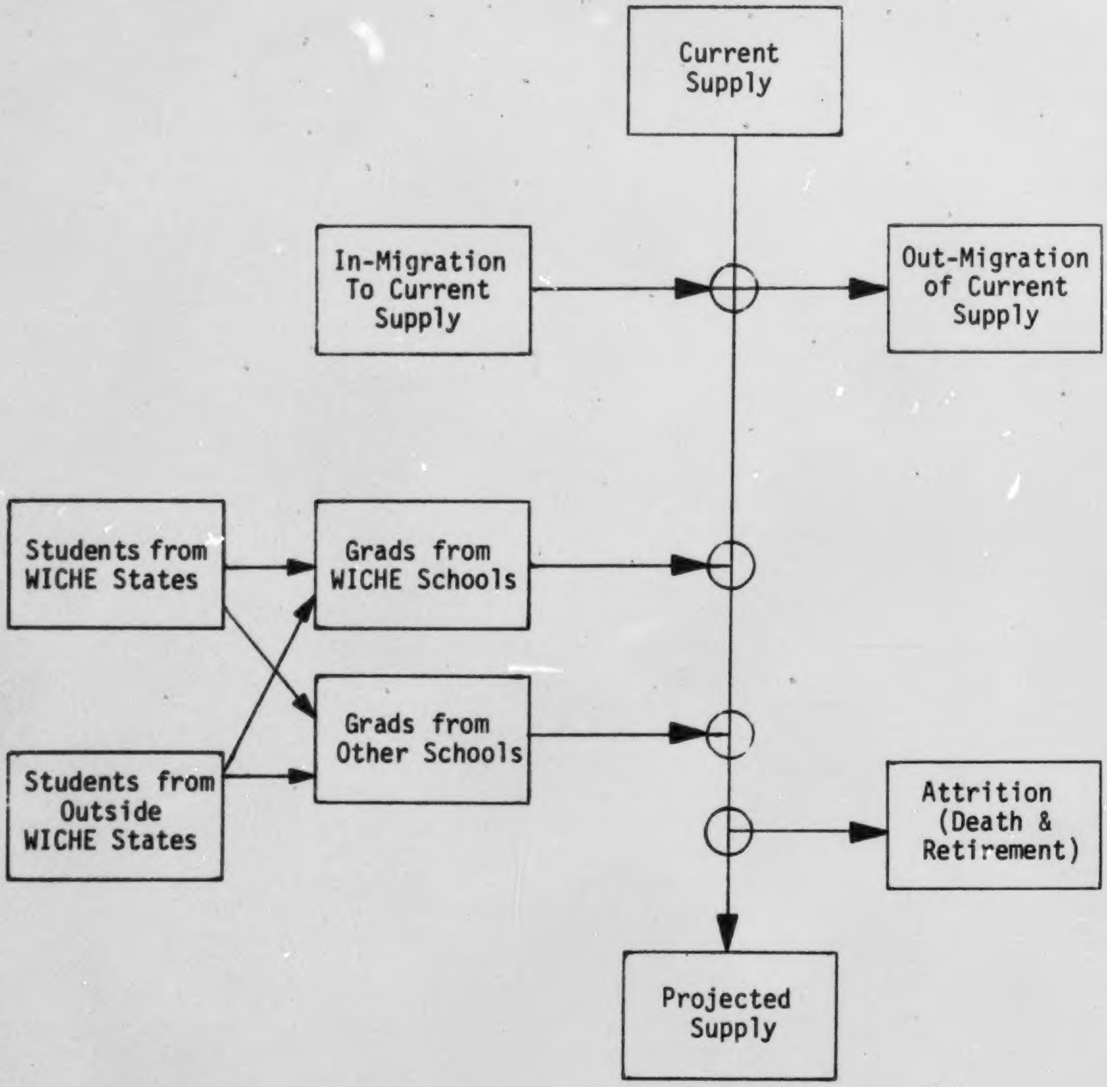
NATIONAL PROJECTIONS


Current Supply
Total Graduations
Attrition (Death and Retirement)
Projected Supply

Projected Supply = Current Supply - Attrition + Total Graduations

Figure 5.2

EXPANDED PROJECTION MODEL TO INCLUDE EFFECTS OF MIGRATION AND GRADUATE RELOCATION


Current Supply
In-Migration To Current Supply
Out-Migration of Current Supply
Students from WICHE States
Grads from WICHE Schools
Grads from Other Schools
Students from Outside WICHE States
Attrition (Death & Retirement)
Projected Supply

Projected Supply = Current Supply - Attrition + In-migration - Out-migration + WICHE Grades into State + Non-WICHE Grads into State

(Where WICHE grads and non-WICHE grads include students from in and out of WICHE region) primary data collection. Some of the required data were obtained, however, from state licensing boards and the WICHE colleges of optometry.

Thus the projection model used in the report (see Figure 5.3) represents a compromise between the open and closed system models. This model requires data on: current supply, number of students enrolled, rate of attrition from the manpower pool, and estimates of migration.

The projected supply of manpower is then computed by the following equation:

$$\begin{array}{l}\text{Projected}\\\text{Supply}\end{array} = \begin{array}{l}\text{Current}\\\text{Supply}\end{array} - \text{Attrition} + \begin{array}{l}\text{Students enrolled}\\\text{from sending state}\end{array} + \begin{array}{l}\text{Net}\\\text{Migration}\end{array}$$

(Net Migration here is estimated to be the change in the size of the state's manpower pool, not accounted for by the state's student enrollment.)

The remaining portion of this chapter discusses the components of this model (Figure 5.3). In order to generate a range of projections, different student enrollment figures and migration rates have been applied to the model. The two sets of projections for each state contained in Chapter VI will also be explained.

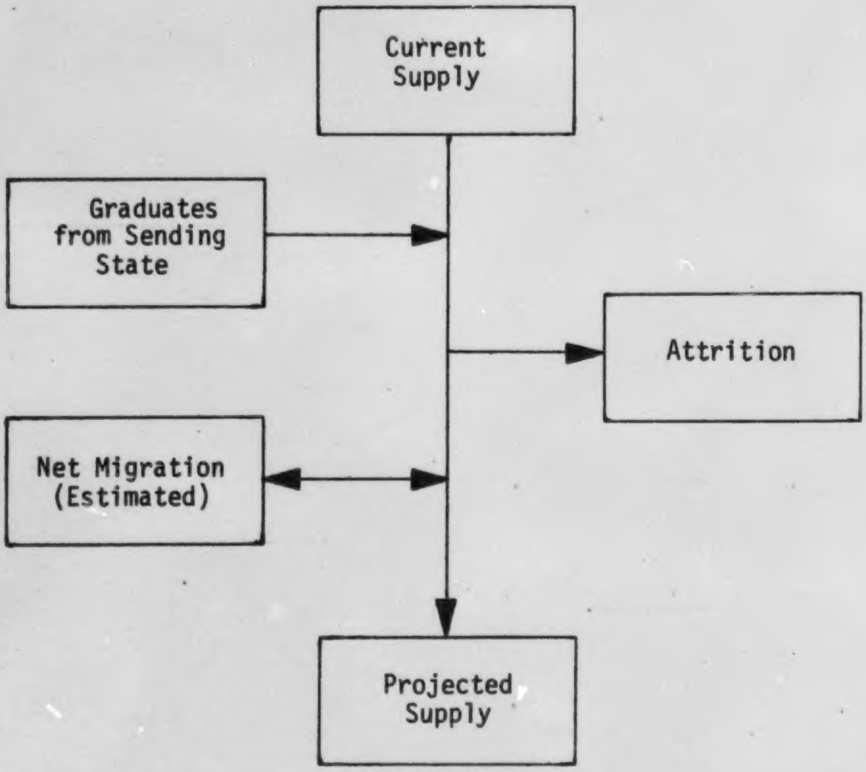
Components of the Projection Model

Current Supply. The current active supply of optometrists for each WICHE state was estimated by using the numbers listed in the most recent 1978-79 rosters provided by state licensing boards and optometric associations. The numbers of licensed optometrists were converted to estimated active optometrists by applying the activity proportions found in the 1973 American Optometric Association survey. Additionally, the individual age specific distribution of the 1973 supply for each state was projected to 1978. Attrition rates were applied, and the resulting difference in supply between 1973 and 1978 supply was considered to be a combination of new graduates and migration; this number of optometrists was placed in the lowest age interval of the 1978 distribution. The 1978 distribution was then projected to 1980 using information about current student enrollments, expected migration, and attrition. This 1980 estimated pool was then used as a base for future projections.

Attrition. Attrition refers to the separation of optometrists from active status in the profession due to death, retirement, or other reasons. Attrition is computed using an age-specific methodology for the purpose of adequately addressing the uneven age distribution of the existing supply of optometrists. The age-specific attrition method is repeatedly applied to five year interval projections using a set of retention probabilities for each interval. The retention probabilities are a combination of the mortality rates for U.S. white males, and the activity proportions (for optometrists) for specified age intervals as taken from the 1973 American Optometric Association survey. As practitioners become older, a greater proportion of the pool is removed from active status. New entries to the system are added into the youngest age interval and subsequently are affected by the appropriate attrition rate.

Figure 5.3

CONDENSED PROJECTION MODEL USED FOR PROJECTIONS WITH OVERALL ESTIMATE OF NET MIGRATION


Current Supply
Graduates from Sending State
Attrition
Net Migration (Estimated)
Projected Supply

Projected Supply = Current Supply - Attrition + Students from sending state + Net Migration

(Where net migration includes all entries or exits to state beyond the state's student enrollment)

Graduates. In the projection model, new graduates are defined for each state as those students who return to the state of origin following graduation. Estimates of the numbers of students originating from each WICHE state are based on school enrollment data for the most recent two year period. Estimates of the number of graduates that return to a particular state are either assumed to be equal to the number sent from the state, or are determined empirically through analyzing school alumni data. This method of estimating return rate is directly related to the estimation of migration and is discussed in more detail under that heading.

In the projections, several different student enrollment estimates are used. One set of enrollment figures represents current trends. The other enrollment estimates are those needed to meet specified manpower ratios by the year 2000.

Migration. Migration is used in the projection methodology to account for the supply of optometrists entering or leaving a state which is not directly attributable to returning graduates or to death and retirement. Two methods of estimating migration were used for this report. Other combinations of migration and return rates are possible but make less sense conceptually.

1. Migration estimate set to zero. Setting migration equal to zero assumes that individual states do not gain or lose optometrists through migration. Additions to the supply of optometrists would come only from the return of graduating students sent from the state. This zero migration assumption was used in the first projection series, (see Table 5.1) along with an assumption of all students returning following graduation. While this is an unrealistic set of conditions, it provides a closed system picture of each state's manpower supply. Projections of the optometrist supply will be very conservative under this set of conditions.

2. Migration estimates based on observed student return rates. Under this condition, states were assumed to receive back only a proportion of the students sent. The proportion was estimated for each state from optometry school alumni records. If a state appears to have a direct return proportion of .60, for instance, six graduates are expected to return for every ten sent. If a state sends ten students and receives back fifteen, six of the ten are counted as direct returns and the remaining nine are counted as migration into the state. This procedure does require one to obtain reliable empirically based return rates but provides a somewhat more realistic picture of actual migration. The return rates used in this report were from two WICHE schools of optometry for the period, 1974 to 1978. As with any estimate, these proportions are subject to error and change. Estimates of migration using this procedure were used in the second projection series (see Table 5.2) along with the corresponding student return rates used in the initial calculation of migration.

Data Sources for Projections

Several published and unpublished data sources were used in deriving estimates for the projections reported in this chapter. Attrition rates

Table 5.1

PROJECTIONS OF ACTIVE OPTOMETRISTS TO YEAR 2000 FOR CALIFORNIA UNDER ZERO MIGRATION

```
PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF   CALIFORNIA  1978 RATIO OF ODS PER 100000 POPULATION =  12.51
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.62
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  472.50
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                             1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                    2904.22       2991.40       3063.80       3119.46       3172.21

ESTIMATED POPULATION IN THOUSANDS         22386         23748         25111         26210         27309

RATIO OF ACTIVE ODS PER 100,000           12.97         12.60         12.20         11.90         11.62
-----------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   CALIFORNIA  1978 RATIO OF ODS PER 100000 POPULATION =  12.51
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  12.51
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  538.14
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                             1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                    2904.22       3057.05       3190.82       3304.82       3415.79

ESTIMATED POPULATION IN THOUSANDS         22386         23748         25111         26210         27309

RATIO OF ACTIVE ODS PER 100,000           12.97         12.87         12.71         12.61         12.51
-----------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF   CALIFORNIA  1978 RATIO OF ODS PER 100000 POPULATION =  12.51
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  458.10
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                             1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                    2904.22       2977.00       3035.93       3077.57       3118.77

ESTIMATED POPULATION IN THOUSANDS         22386         23743         25111         26210         27309

RATIO OF ACTIVE ODS PER 100,000           12.97         12.54         12.09         11.74         11.42
-----------------------------------------------------------------------------------------------------

SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=   1418.92
```

Table 5.2

PROJECTIONS OF ACTIVE OPTOMETRISTS TO YEAR 2000 FOR CALIFORNIA UNDER TREND MIGRATION

```
CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF    CALIFORNIA  1978 RATIO OF ODS PER 100000 POPULATION =  12.51
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  13.44
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  472.50           RETURN GRADS=  434.70
MIGRATION OF ODS TO STATE = 171.96


PROJECTED YEAR                                1980        1985        1990        1995        2000

ESTIMATED ACTIVE ODS                       2904.22     3125.56     3323.39     3499.33     3670.04

ESTIMATED POPULATION IN THOUSANDS            22386       23748       25111       26210       27309

RATIO OF ACTIVE ODS PER 100,000              12.97       13.16       13.23       13.35       13.44
--------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF    CALIFORNIA  1978 RATIO OF ODS PER 100000 POPULATION =  12.51
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  12.51
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  398.02           RETURN GRADS=  366.17
MIGRATION OF ODS TO STATE = 171.96


PROJECTED YEAR                                1980        1985        1990        1995        2000

ESTIMATED ACTIVE ODS                       2904.22     3057.04     3190.80     3304.79     3415.76

ESTIMATED POPULATION IN THOUSANDS            22386       23748       25111       26210       27309

RATIO OF ACTIVE ODS PER 100,000              12.97       12.87       12.71       12.61       12.51
--------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF    CALIFORNIA  1978 RATIO OF ODS PER 100000 POPULATION =  12.51
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  311.01           RETURN GRADS=  286.13
MIGRATION OF ODS TO STATE = 171.96


PROJECTED YEAR                                1980        1985        1990        1995        2000

ESTIMATED ACTIVE ODS                       2904.22     2976.99     3035.92     3077.55     3118.74

ESTIMATED POPULATION IN THOUSANDS            22386       23748       25111       26210       27309

RATIO OF ACTIVE ODS PER 100,000              12.97       12.54       12.09       11.74       11.42
--------------------------------------------------------------------------------------------------

SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=   2057.00
```

combined mortality data published in Department of Health, Education, and Welfare life tables[1] and activity proportions for optometrists reported in the 1973 Optometric Resources survey.[2] Baseline optometrist supply data came from recent licensing rosters provided by the state licensing boards and optometric associations. Student return rates were compiled from alumni data supplied directly from Pacific University and the Southern California College of Optometry. Past enrollments were compiled from information provided by the American Optometric Association and the Association of Schools and Colleges of Optometry.

Population projections to the year 2000 were obtained from the U.S. Census Bureau.[3] All projections utilized Series II-B, which assumes that future interstate migration will continue at the rate established during the period 1970-75. This series provides the highest level of population for the WICHE states. Based on comparisons between Census Bureau projections and other state population reports, Series II-B appears to give the most realistic set of projections.

In addition to data used as a base for projections, independent validation data were obtained from the State of California Board of Optometry. These data were used to compare trend based projection estimates with actual observed student returns and migration.

Examples of Projections Under Different Assumptions

Tables 5.1 and 5.2 present examples of projections for the State of California under two differing assumptions of migration and return rate. Table 5.1 is computed using the assumption of zero in-migration to the State of California and 100 percent return rate of California optometry students. This set of conditions represents the closed system projection assuming that future manpower would be determined solely from the enrollments originating in California. This can be considered to be a low projection, as data indicate considerable migration of optometrists into California. Table 5.2 is computed under the assumptions of trend estimated migration and less than 100 percent return rate. The figures in Table 5.2 should more closely represent the realistic projections and could be high estimates if the amount of migration into California should decrease.

Contained in both Tables 5.1 and 5.2 are projections made under three enrollment assumptions. The assumptions are: 1) that enrollments continue along the recent trends; 2) that enrollments are adjusted to maintain the 1978 manpower ratio in the year 2000; and 3) that enrollments are adjusted to equal the current WICHE regional average optometrist ratio in the year 2000. For California, achieving the WICHE average represents a decrease in manpower as the state is currently above the regional average.

A review of the top one-third of Table 5.1 indicates the following:

a. The 1978 ratio of California optometrists to 100,000 population is 12.51.

b. The WICHE region average ratio as of 1978 is 11.42.

c. Based on the current enrollment trend of 472.5 students for a five year period, and assuming all these students graduate and return to California, and there is zero migration of other optometrists into the state, there would be 3,172 estimated active optometrists projected for California in the year 2000. This number would translate into a ratio of 11.62 per 100,000 population when divided by Census Bureau estimates of population. Estimated population is printed in thousands in the table.

The center section of Table 5.1 indicates the enrollments necessary to maintain the current California ratio of 12.51. The table indicates that assuming zero in-migration, it would be necessary to enroll 538 California students over a five year period to maintain the current ratio in the year 2000.

The lower section of Table 5.1 indicates the enrollments necessary to have a ratio in the year 2000 equal to the current WICHE average ratio of 11.42. Because of the fact that California is currently above that ratio, the 11.42 could be achieved while dropping total enrollments. A five year enrollment figure of 458 students along with zero migration would produce the WICHE ratio provided all students return to practice within California.

Shifting now to Table 5.2, a different set of assumptions is made. Table 5.2 is computed assuming that the return of graduates is less than 100 percent and is estimated based on empirical data. The estimated return rate for California is approximately .92 indicating that if California maintains a five year enrollment trend of 472 students, approximately 435 of these students are likely to return to practice in the state. Estimated migration is considerably greater than the loss in students. Looking at the top of Table 5.2, it is shown that the expected five year optometrist in-migration to California is estimated at close to 172. The projected supply of optometrists in the year 2000 under the assumption of current enrollments, .92 return rate, and 172 optometrists migrating into the state, is 3,670 or a ratio of 13.44. This ratio is considerably higher than shown in Table 5.1 under the assumption of zero migration.

The center section of Table 5.2 is again designed to indicate the necessary enrollments to maintain the current ratio of 12.51. When migration is included as in Table 5.2, it is seen that the 12.51 ratio could be obtained through the enrollment of 398 students over a five year period, even though only 366 are expected to return. This figure contrasts sharply with the 538 students needed under the earlier assumption of zero migration.

Finally, the lower section of Table 5.2 indicates the number of students needed to obtain the WICHE regional average. With the effects of migration taken into account, this ratio could be obtained by as few as 311 students for a five year period as compared to the 458 needed in Table 4.1 when zero migration was assumed.

A comparison of the projections on Tables 5.1 and 5.2 gives a clear indication of the effect of in-migration upon the State of California. The zero migration assumption seems unrealistically low, especially in California where students from other states are likely to attend optometry school and eventually relocate. As mentioned, the projections utilizing trend migration have the potential for being high if for some reason the evidenced influx to the state should decline or the return rate for California students should change. There also is the possibility that the rate of migration into California could increase, thus making the projections more conservative. All in all, largely due to the presence of schools of optometry in California, Table 5.2 might represent a somewhat realistic projection of future optometric manpower in California.

Validation of Projection Estimates

The validity of the trend-based enrollment, student return and in-migration estimates as used in Table 5.2 was tested for the State of California by obtaining independent licensing data from the State Board of Optometry. The information obtained includes years of graduation and licensure, and state of high school. High school location was considered an indicator of former residency. Based on the available information (regarding total enrollments and returns), in-migration was computed for the past five years and compared with trend based estimates derived using a different method. The comparisons are reported below in Table 5.3.

In the case of California, there is a high degree of agreement between the trend based estimates derived for use in the projection methodology and the actual numbers observed from California licensing data. The observed amount of in-migration is actually higher than the estimate, indicating that the projections for California using the derived estimates could even be slightly conservative if the observed migration pattern continues.

Projections of Optometrists for WICHE States

A summary of the projected ratios of optometrists to 100,000 population for all WICHE states based on the current enrollment trend is presented in Table 5.4. This table depicts the likely situation by the year 2000 if the number of students enrolled from each of the WICHE states remains similar to the past few years. The projections are computed under two combinations of migration and student return. Assumption 1 states that all students return to the sending state and there is no in-migration of other optometrists. Generally, this assumption produces the low end projection. Assumption 2 assumes students return to the sending state at current observed rates and that there is interstate migration. The second assumption produces the higher but more realistic projection if interstate migration into the West continues as it has been.

While the manpower supply in the entire region is likely to increase by the year 2000, there are states such as Colorado and Utah that will still be well below the current regional average of 11.4. On the other hand, there are states that have had a recent surge either in the training of optometry students, or in the migration of optometrists into the state, that could produce an oversupply if that trend continues.

Another way of summarizing projections for the different WICHE states is to determine the number of students annually that need to be enrolled in order to achieve or maintain a particular manpower ratio. Table 5.5 indicates the number of students recommended to maintain the current ratio

Table 5.3

COMPARISON OF TREND-BASED ESTIMATES OF STUDENT RETURNS AND IN-MIGRATION WITH OBSERVED FOR CALIFORNIA

	Number of Students Sent	Student Returns	Inmigration of ODs
5 Year Trend-Based Estimates	472	434	172
Observed Numbers	492	443	233

SOURCE: Trend-Based Estimates computed from projection methodology using Age-specific attrition and seven student enrollment and return rates.

Observed Numbers - Taken from licensing data provided by State of California Board of Optometry for Optometrists licensed after 1972. ODs practicing in California who graduated high school elsewhere were counted in in-migration to state.

Table 5.4

PROJECTIONS OF OPTOMETRIST RATIOS TO YEAR 2000 UNDER RECENT ENROLLMENT TRENDS WITH DIFFERING MIGRATION AND RETURN RATE ASSUMPTIONS

	Present Ratio	Assumption 1: All Students Return To Sending State & There Is No Other Immigration of O.D.'s	Assumption 2: Students Return to Sending States at Current Rate & Migration of O.D.'s Continues at Recent Rate
ALASKA	9.2	10.7	21.3
ARIZONA	8.4	6.6	11.2
CALIFORNIA	12.5	11.6	13.4
COLORADO	9.3	7.3	9.0
HAWAII	9.4	16.7	18.0
IDAHO	12.1	11.4	16.9
MONTANA	15.1	20.6	14.9*
NEVADA	8.3	12.7	16.5
NEW MEXICO	7.4	13.6	11.1*
OREGON	13.5	13.7	16.3
UTAH	6.7	9.8	8.4*
WASHINGTON	9.9	12.0	10.2*
WYOMING	12.9	36.2	40.1**
REGION	11.4	11.6	13.3

*State has had recent trend of out-migration of optometrists; recent graduates returning to the state do not offset O.D.'s leaving the state.

**Note Wyoming has had recent surge in enrollment inflating projections also population projections may be low for Wyoming because of very recent growth.

SOURCE: Population projections--U.S. Bureau of the Census, Series P-25, No. 735, series II-B. Assumes 1970-75 interstate migration rate.

Table 5.5

NUMBERS OF STUDENTS NEEDED PER YEAR BY WICHE STATES UNDER DIFFERENT MIGRATION AND STUDENT RETURN ASSUMPTIONS

Annual Students Needed to Maintain Current Ratio for States above WICHE Average:

State	Under Assumption 1: All Students Return --No Net Migration	Under Assumption 2: Students Return at Observed Return Rates --Migration at Current Rate
CALIFORNIA	107.6	79.6
IDAHO	4.5	.4
*MONTANA	4.6	7.6
OREGON	13.7	6.1
WYOMING	1.4	0.0
Sub-Total	131.8	93.7

Annual Students Needed to Raise States Below to Regional Average of 11.4:

ALASKA	1.7	0.0
ARIZONA	16.9	7.4
COLORADO	16.5	15.5
HAWAII	4.6	3.7
NEVADA	3.9	6.1
NEW MEXICO	7.0	6.4
UTAH	8.5	12.4
*WASHINGTON	17.2	22.7
Sub-Total	76.3	74.2
GRAND TOTAL	208.1	167.9

NOTES: *States had recent trend of out-migration. Return graduates do not offset losses in state.

208 students corresponds to approximately 83% of enrollment capacity of WICHE schools.

167 students corresponds to approximately 67% of enrollment capacity of WICHE schools.

for states now above the regional average of 11.4, and to reach the ratio of 11.4 by the year 2000 for states now below that figure. The top section of Table 5.5 presents the number of students most likely required under the same sets of assumptions used in the preceding table. The five states in this section currently have ratios above the regional average, and the enrollments described would tend to keep their ratios at the same levels. The eight states in the lower section of the table are all currently below the regional average and the enrollment shown under the two assumptions are those required to achieve a ratio of 11.4 by the year 2000. The grand total at the bottom of the table indicates the number of student seats that would be required each year under the two assumptions to achieve the desired ratios. While the conservative assumption of no interstate migration would require a larger number of student seats, that number still does not require the total enrollment capability of the three WICHE schools. Under the conservative assumption, 83 percent of the enrollment capacity would be needed as compared to 67 percent when interstate migration is also assumed.

Simply put, the three schools in the WICHE region could raise the manpower ratios in all WICHE states to above the current regional average without utilizing all of the existing enrollment capacity (of the three western colleges). In addition, if all of the existing capacity of the schools was used specifically for supplying manpower for the WICHE region, there could be a regional ratio of approximately 13.7 optometrists per 100,000 population by the year 2000, even under an assumption of zero migration. If additional migration is included, that ratio could be much higher. A note of caution, however. Much of the migration into the region occurs in the form of students graduating from one of the three schools who were residents of states outside the region. Should the capacity of the three schools be limited only to students from the region, the amount of in-migration would most likely drop and the migration estimates used in the projections would have to be adjusted accordingly.

Chapter Summary

After reviewing the drawbacks to an aggregated projection methodology for projecting future manpower supply in individual states, a new model was developed. The model takes account of migration both in the form of the existing supply and in the relocation of new graduates. All entries and exits to the supply which are not accounted for by returning graduates or attrition are attributed to migration. Estimates from the recent trends can then be developed and applied to future projections. The methodology allows for independent estimates of migration including one based on an assumption of zero migration.

Attrition is applied on an age-specific probability basis, removing persons from the supply in five year intervals with probabilities increasing towards the higher age range. The probabilities were derived from a combination of mortality statistics and expected activity proportions.

Projections of supply were computed for a wide range of assumptions. The assumptions included three enrollment alternatives which were computed under both a trend migration and zero migration assumption.

Summaries of projected ratios from the states under current enrollment trends and projections of the required enrollments to meet specified ratios were included.

In general, the projections indicated that the regional manpower supply could be adequately addressed by the three schools within the region, especially if the trend of migration into the region continues.

FOOTNOTES

Chapter V

1. U.S. Dept. of Health, Education, and Welfare. Life Tables: Vital Statistics of the United States, 1976, Vol. II, Section 5. NCHS, DHEW Publication No. (HEW) 396, 1978.

2. Prepared by Optometric Manpower Resources Project for U.S. Dept. of Health, Education, and Welfare. Optometric Manpower Resources, 1973. Contract No. 1M1-14173, May 1976.

3. U.S. Bureau of the Census. Illustrative Projections of State Populations, 1975 to 2000. (Advance Report), Population Estimates and Projections, Series P-25, No. 735, October 1978.

Chapter VI

STATE MANPOWER SUMMARIES

It is valuable to look at the supply of manpower on a regional basis since many trends are similar throughout the thirteen western states. For instance, the nation's western migration will be reflected in an increased need for vision care services, and providing accessible services is complicated in most states by geographic and climatic barriers and sparsely populated rural areas. Although the region is a useful unit of analysis, each state within the region is unique. Since decisions relating to manpower and educational opportunity are made by individual states, it is important to discuss the implications of the data from this report for each state individually.

This chapter will present thirteen state summaries. Data from various sections of this report will be integrated into a discussion of the states' manpower projections and student enrollments. Following the descriptive summary for each state are two sets of projections: the first was computed using the assumptions of zero in-migration of optometrists to the state and that 100 percent of the students would return to practice, and the second set was based on the assumptions that present migration and student return rates would continue. The reader should consult Chapter V for an understanding of these projections and for a description of how to read these tables.

The numbers generated by projection methodologies are not magical; they may reflect error of one sort or another. However, they can be useful when examined in the context of other relevant facts and trends. For instance, a 15.2 ratio of optometrists to 100,000 persons could seem high for a state when the regional average is only 11.4. However, if the state's ratio of board certified ophthalmologists was very low (only 2.0 in comparison to the average 5.0), it would seem that optometrists are very important to the delivery of vision care in that state and a ratio of 15.2 is not excessively high.

For each state it is important to look at the change in the supply of optometrists from 1973 to 1978, and to compare that uspply with other states (Table 3.1). Because of the overlap in the roles of optometrists and ophthalmologists it is useful to examine the ratio of board certified ophthalmologists for a picture of the total supply of vision care providers available in the state. It is also important to note how these practitioners are distributed within the state. Although there are some limitations to using county data as an indicator of accessibility of services, the number of counties without an optometrist does give some indication of how manpower is distributed. According to the WICHE sources, no western county without an optometrist has a board certified ophthalmologist (see Appendix A).

The manpower projections will be discussed in terms of enrollment trends. The numbers of students which a state should support to either maintain its current optometrist ratio if the state is above 11.4 or to reach the current regional average ratio (11.4) by the year 2000 are discussed. Aside from its manpower needs, a state should be interested as well in the level of educational opportunity available to its students in optometry (see Table 4.9). While the region as a whole appears to be in relatively good shape, there are some states which have a real shortage of optometrists and others which may be facing a situation of oversupply.

ALASKA

For Alaska the 1978 ratio of optometrists to 100,000 population was 9.2 in comparison to the WICHE regional average of 11.4. This 1978 ratio is nearly doubled the 1973 level of 5.5. The current ratio of ophthalmologists was 4.2, so that the combined (O.D. + M.D.) ratio of vision care providers was about 13.4 per 100,000 (the regional average is 16.4).

Based on the state's current enrollment trend of sending about 7.5 students to optometry school per five year period, and assuming all these students return to Alaska and practice there and no in-migration of optometrists occurs, the ratio of optometrists to population is projected to increase to 10.8 by the year 2000. Under these assumptions, if Alaska wished to attain the current regional average supply of optometrists by 2000, the state would need to support somewhat more students (8.4 per five year period).

Recent migration of optometrists to Alaska has been estimated to be high--about seventeen over the last five years. In fact, the state's supply of optometrists has resulted more from in-migration than from Alaskan students returning to practice. If this migration pattern were to continue, and students continued to return to the state to practice at the same rate as they have, the ratio of optometrists to population would be 21.4 by the year 2000. Because of the "post pipeline slump" in Alaska's economy, it is very unlikely that this in-migration will persist. In fact, the optometric association has recently reported that two optometrists have migrated out of the state, and that only thirty-five remain. This would mean that the current ratio is only 8.6. However, the Alaska State Medical Association shows a gain in number of ophthalmologists to 4.9 per 100,000. The combined ratio (O.D. + M.D.) would be 13.5 per 100,000 and show a higher ratio of ophthalmologists to optometrists (.57) than reported earlier in Chapter III.

It is difficult to judge what a desirable ratio of optometrists to population would be for a state like Alaska. Its population of about 400,000 is spread out over a land mass one-fifth the size of the lower forty-eight states. Access to care is made difficult by severe weather and a lack of roads. Many optometrists have provided care as itinerants for remote areas. Travel expenses make delivering care very expensive. Because of the sparsity of the population there are probably few communities which could support a fee-for-service optometrist.

Perhaps the greatest unmet vision needs exist in the Native population. Only one of the twelve Native Health Corporations has hired an optometrist, although others are interested. In 1978, the Indian Health Service estimated there were 71,200 Natives in Alaska. Its Systems Development office in Anchorage showed a need for twenty optometric positions (including assistants) and only four positions were authorized. In some northern communities, vision aides who have had only a few weeks of training try to do the work of an optometrist. Vision care usually assumes a low priority in the face of more pressing health problems.

Alaska's population is a relatively young one. Hence the increase in the state's need for optometric services results mostly from the projected growth in the absolute size (of the population). It should be noted, however, that age-specific population projections for the state were unavailable.

In comparison with other western states, Alaska has generated proportionately fewer total applicants through the WICHE Professional Student Exchange Program. However, any certified student who has been admitted to optometry school has been supported by the state. It may be appropriate for the state to consider recruiting and supporting an additional number of students--particularly minority students to serve the Native population.

PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR ALASKA

PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF ALASKA 1978 RATIO OF ODS PER 100000 POPULATION = 9.18
WICHE REGION 1978 AVERAGE RATIO = 11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS = 10.79
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD= 7.50
MIGRATION OF ODS TO STATE = 0.00

PROJECTED YEAR	1980	1985	1990	1995	2000
ESTIMATED ACTIVE ODS	45.01	49.11	53.23	56.56	58.68
ESTIMATED POPULATION IN THOUSANDS	412	451	491	517	544
RATIO OF ACTIVE ODS PER 100,000	10.92	10.88	10.84	10.93	10.79

PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF ALASKA 1978 RATIO OF ODS PER 100000 POPULATION = 9.18
WICHE REGION 1978 AVERAGE RATIO = 11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS = 9.18
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD= 5.15
MIGRATION OF ODS TO STATE = 0.00

PROJECTED YEAR	1980	1985	1990	1995	2000
ESTIMATED ACTIVE ODS	45.01	46.75	48.68	49.88	49.95
ESTIMATED POPULATION IN THOUSANDS	412	451	491	517	544
RATIO OF ACTIVE ODS PER 100,000	10.92	10.36	9.91	9.64	9.18

PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF ALASKA 1978 RATIO OF ODS PER 100000 POPULATION = 9.18
WICHE REGION 1978 AVERAGE RATIO = 11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS = 11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD= 8.43
MIGRATION OF ODS TO STATE = 0.00

PROJECTED YEAR	1980	1985	1990	1995	2000
ESTIMATED ACTIVE ODS	45.01	50.04	55.03	59.20	62.13
ESTIMATED POPULATION IN THOUSANDS	412	451	491	517	544
RATIO OF ACTIVE ODS PER 100,000	10.92	11.08	11.21	11.44	11.42

SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION= 30.85

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                              PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR ALASKA
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CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF    ALASKA       1978 RATIO OF ODS PER 100000 POPULATION =    9.18
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  21.36
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=    7.50          RETURN GRADS=    5.62
MIGRATION OF ODS TO STATE =  17.37


PROJECTED YEAR                                1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                         45.01         64.60         83.21        100.55        116.18

ESTIMATED POPULATION IN THOUSANDS              412           451           491           517           544

RATIO OF ACTIVE ODS PER 100,000              10.92         14.31         16.95         19.43         21.36
-----------------------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF    ALASKA       1978 RATIO OF ODS PER 100000 POPULATION =    9.18
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   9.18
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD= -16.30          RETURN GRADS= -12.22
MIGRATION OF ODS TO STATE =  17.37


PROJECTED YEAR                                1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                         45.01         46.75         48.67         49.88         49.94

ESTIMATED POPULATION IN THOUSANDS              412           451           491           517           544

RATIO OF ACTIVE ODS PER 100,000              10.92         10.35          9.91          9.64          9.18
-----------------------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF    ALASKA       1978 RATIO OF ODS PER 100000 POPULATION =    9.18
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD= -11.92          RETURN GRADS=   -8.94
MIGRATION OF ODS TO STATE =  17.37


PROJECTED YEAR                                1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                         45.01         50.04         55.03         59.20         62.12

ESTIMATED POPULATION IN THOUSANDS              412           451           491           517           544

RATIO OF ACTIVE ODS PER 100,000              10.92         11.08         11.21         11.44         11.42
-----------------------------------------------------------------------------------------------------------------

SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=     95.31
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ARIZONA

The 1978 ratio of optometrists per population was 8.4; although the ratio increased since 1973 when it was 7.2, the state remains below the current regional average of 11.4. Arizona has one of the highest ratios of ophthalmologist per 100,000 population (5.4). However, the combined ratio (O.D. + M.D.) of vision care providers is 13.8, below the regional average of 16.4.

The vision care needs are expected to increase more drastically for Arizona than for any other WICHE state (see Table 2.6). On the basis of projected population growth, the state will need 50 percent more vision services in the year 2000. Because Arizona is a sun-belt state, the age distribution of its population is expected to shift significantly. A more aged population will need 10.5 percent more services by 2000. On the basis of these needs, it is estimated that Arizona will require an optometrist population ratio of 14.1 (in 2000); this ratio would be considerably higher than the current state ratio of 8.4 or the regional average (11.4).

If the state continues to support students under the WICHE program as they have (about thirty-five students per five years), and all of these students return, and if there is no in-migration of optometrists, the ratio of optometrists would drop to 6.6 by the year 2000. Under these assumptions Arizona would need to support about eighty-four students over five years if the state wished to attain the current regional optometrist ratio.

An assumption of no migration is not realistic for this state. Over the past five years about sixty optometrists have migrated to Arizona. While many of these migrants may be near retirement, many are also new graduates. If the enrollment and migration trends continue as they have, the ratio of optometrists is projected to increase to 11.2 by the year 2000. While this is a substantial improvement over 8.4 it is below the regional average and well below the ratio required to meet projected state needs.

In terms of other state characteristics, the minority population is large--predominantly the Native Americans who have relatively great needs. The vision care providers are largely concentrated in the urban areas of the state. As of 1977, there were eighty-six ophthalmologists in Maricopa County (Phoenix) and twenty-nine in Pima County (Tucson), and only fourteen in the rest of the entire state.

In terms of the manpower required to meet the state's vision care needs, and because Arizona is below average on the measure of providing educational opportunities (see Table 4.9), decision makers may wish to consider supporting a greater number of optometry students in the future.

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                          PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR ARIZONA
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PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF   ARIZONA     1978 RATIO OF ODS PER 100000 POPULATION =   8.40
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   6.62
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   35.00
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                               1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                       221.82       231.11       240.20       247.77       253.19

ESTIMATED POPULATION IN THOUSANDS            2568         2914         3261         3541         3822

RATIO OF ACTIVE ODS PER 100,000              8.64         7.93         7.37         7.00         6.62
---------------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   ARIZONA     1978 RATIO OF ODS PER 100000 POPULATION =   8.40
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   8.40
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   53.34
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                               1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                       221.82       249.44       275.68       299.83       321.23

ESTIMATED POPULATION IN THOUSANDS            2568         2914         3261         3541         3822

RATIO OF ACTIVE ODS PER 100,000              8.64         8.56         8.45         8.47         8.40
---------------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF   ARIZONA     1978 RATIO OF ODS PER 100000 POPULATION =   8.40
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   84.40
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                               1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                       221.82       280.51       335.79       388.01       436.49

ESTIMATED POPULATION IN THOUSANDS            2568         2914         3261         3541         3822

RATIO OF ACTIVE ODS PER 100,000              8.64         9.62        10.30        10.96        11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=    123.31
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                         PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR ARIZONA
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CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF    ARIZONA      1978 RATIO OF ODS PER 100000 POPULATION =    8.40
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.29
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   35.00          RETURN GRADS=   23.10
MIGRATION OF ODS TO STATE =  59.93


PROJECTED YEAR                              1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                      221.82        279.14        333.14        384.13        431.41

ESTIMATED POPULATION IN THOUSANDS           2568          2914          3261          3541          3822

RATIO OF ACTIVE ODS PER 100,000             8.64          9.58         10.22         10.85         11.29
-----------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF    ARIZONA      1978 RATIO OF ODS PER 100000 POPULATION =    8.40
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   8.40
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   -9.99          RETURN GRADS=   -6.60
MIGRATION OF ODS TO STATE =  59.93


PROJECTED YEAR                              1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                      221.82        249.44        275.68        299.82        321.22

ESTIMATED POPULATION IN THOUSANDS           2568          2914          3261          3541          3822

RATIO OF ACTIVE ODS PER 100,000             8.64          8.56          8.45          8.47          8.40
-----------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF    ARIZONA      1978 RATIO OF ODS PER 100000 POPULATION =    8.40
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   37.07          RETURN GRADS=   24.47
MIGRATION OF ODS TO STATE =  59.93


PROJECTED YEAR                              1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                      221.82        280.50        335.78        388.01        436.48

ESTIMATED POPULATION IN THOUSANDS           2568          2914          3261          3541          3822

RATIO OF ACTIVE ODS PER 100,000             8.64          9.62         10.30         10.96         11.42
-----------------------------------------------------------------------------------------------------

SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=    345.69
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CALIFORNIA

California is particularly important to the region because of the size of its population, which is greater than that of all the other twelve states combined.

The picture of vision care services in California is positive. The ratio of optometrists increased to 12.5 from the 1973 ratio of 11.7. In addition to most students staying to practice in the state, about 170 optometrists have migrated to California in a five year period. This positive manpower situation is a result of having two of the region's three schools of optometry in the state. California also has a high ratio of ophthalmologists (5.3) and a high combined (O.D. + M.D.) ratio of 17.8 (compared to a regional average of 16.4).

In terms of the vision care needs of the population, absolute growth is projected to increase need by about 23 percent, and an age distribution shift will generate a 7 percent increase in needs. This study has estimated that California could need about fourteen optometrists per 100,000 population in the year 2000.

The optometrists in the state also appear to be well distributed. Only two of fifty-eight counties appear to have no optometrists. It may be that the greatest shortage areas for the state exist in central city locations. This situation may be related to the concentration of minority populations in the urban areas and the real shortage of minority providers (see Table 4.7).

If the state continued to send as many students to optometry school and they all remained in the state to practice, and if no optometrists migrated to the state, the optometrist ratio would drop to 11.6 by 2000. However, this is very unlikely for California. Many students from outside the state will continue to come to school in California, and some of these students will stay to practice; for instance, it has been reported that 80 percent of the out-of-state students who attend the University of California at Berkeley stay in California.[1] Assuming that migration to the state continues, along with current enrollment and student return rates, the ratio of optometrists will increase to 13.4 by 2000. Thus, it appears that California will continue to be in a relatively positive position, if current trends persist. Any change in state policy probably will need to relate to the need to recruit and retain qualified minority students.

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                         PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR CALIFORNIA
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PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF   CALIFORNIA  1978 RATIO OF ODS PER 100000 POPULATION =  12.51
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.62
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  472.50
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                     2904.22      2991.40      3063.80      3118.46      3172.21

ESTIMATED POPULATION IN THOUSANDS          22386        23748        25111        26210        27309

RATIO OF ACTIVE ODS PER 100,000            12.97        12.60        12.20        11.90        11.62
----------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   CALIFORNIA  1978 RATIO OF ODS PER 100000 POPULATION =  12.51
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  12.51
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  538.14
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                     2904.22      3057.05      3190.82      3304.82      3415.79

ESTIMATED POPULATION IN THOUSANDS          22386        23748        25111        26210        27309

RATIO OF ACTIVE ODS PER 100,000            12.97        12.87        12.71        12.61        12.51
----------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF   CALIFORNIA  1978 RATIO OF ODS PER 100000 POPULATION =  12.51
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  458.10
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                     2904.22      2977.00      3035.93      3077.57      3118.77

ESTIMATED POPULATION IN THOUSANDS          22386        23748        25111        26210        27309

RATIO OF ACTIVE ODS PER 100,000            12.97        12.54        12.09        11.74        11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=   1418.92
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                          PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR CALIFORNIA
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CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF   CALIFORNIA  1978 RATIO OF ODS PER 100000 POPULATION =  12.51
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  13.44
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  472.50          RETURN GRADS=  434.70
MIGRATION OF ODS TO STATE = 171.96


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                     2904.22      3125.56      3323.39      3499.33      3670.04

ESTIMATED POPULATION IN THOUSANDS          22386        23748        25111        26210        27309

RATIO OF ACTIVE ODS PER 100,000            12.97        13.16        13.23        13.35        13.44
---------------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   CALIFORNIA  1978 RATIO OF ODS PER 100000 POPULATION =  12.51
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  12.51
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  398.02          RETURN GRADS=  366.17
MIGRATION OF ODS TO STATE = 171.96


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                     2904.22      3057.04      3190.80      3304.79      3415.76

ESTIMATED POPULATION IN THOUSANDS          22386        23748        25111        26210        27309

RATIO OF ACTIVE ODS PER 100,000            12.97        12.87        12.71        12.61        12.51
---------------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF   CALIFORNIA  1978 RATIO OF ODS PER 100000 POPULATION =  12.51
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  311.01          RETURN GRADS=  286.13
MIGRATION OF ODS TO STATE = 171.96


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                     2904.22      2976.99      3035.92      3077.55      3118.74

ESTIMATED POPULATION IN THOUSANDS          22386        23748        25111        26210        27309

RATIO OF ACTIVE ODS PER 100,000            12.97        12.54        12.09        11.74        11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=   2057.00
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COLORADO

The 1978 ratio of optometrists per population was 9.3 per 100,000. This ratio is well below the regional average of 11.4, but above the state's 1973 ratio of 8.4. There are 4.9 ophthalmologists per 100,000 population, and the combined ratio of optometrists and ophthalmologists is 14.2 (below the regional 16.4 average).

By the year 2000, the vision care needs of the state are expected to leap by nearly 40 percent because of size, and by about 7 percent because of the aging of the population. Based on these projections of need, Colorado may require a ratio of 13.8 optometrists to meet the service requirements of the population.

In terms of geographical distribution, twenty-two of the state's sixty-three counties had no optometrists in 1977; the largest of these counties had a population of about 10,600 persons at that time. Not only do these counties lack the services of an optometrist, they also do not have an ophthalmologist. In fact, all western counties which lack optometric care also lack opthalmologic care. It has been suggested that growth in the number of optometrists has been affected by a combination of factors including a strong Department of Ophthalmology and residency training program at the University of Colorado Medical School and has only recently begun supporting optometry students through the WICHE Professional Student Exchange Program (ten per entering class). Compared to other states, educational opportunities for students in optometry are low in this state. Under an assumption of no migration, Colorado would need to support about sixty students per five year period to simply maintain the status quo; to attain the current WICHE ratio of 11.4 the state would need to send about eighty students to optometry school per five year period. Colorado will undoubtedly continue to experience significant migration, particularly as a result of energy development. Therefore, the second series of projections is most realistic. Assuming that migration, enrollment and student return trends continue as they have, Colorado's ratio of optometrists will drop to 9.05 by the year 2000. Under these conditions, if the state wishes to maintain its current ratio, slightly more students must be enrolled (forty-four per five years). However, if the state wished to attain the current regional average of 11.4 by 2000, the state would need to send seventy-eight students to optometry school per five year period (in contrast to the forty currently sent).

On the basis of projected needs of the population and the expected supply of manpower, as well as on the basis of low educational opportunity, it appears that Colorado could consider significantly increasing its support of optometry students.

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                                   PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR COLORADO
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PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF    COLORADO     1978 RATIO OF ODS PER 100000 POPULATION =    9.28
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   7.37
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   40.00
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                               1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                       260.52        271.58        279.44        283.96        286.66

ESTIMATED POPULATION IN THOUSANDS            2823          3116          3409          3650          3892

RATIO OF ACTIVE ODS PER 100,000              9.23          8.72          8.20          7.78          7.37
---------------------------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF    COLORADO     1978 RATIO OF ODS PER 100000 POPULATION =    9.28
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   9.28
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   60.06
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                               1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                       260.52        291.64        318.26        340.91        361.09

ESTIMATED POPULATION IN THOUSANDS            2823          3116          3409          3650          3892

RATIO OF ACTIVE ODS PER 100,000              9.23          9.36          9.34          9.34          9.28
---------------------------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF    COLORADO     1978 RATIO OF ODS PER 100000 POPULATION =    9.28
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   82.53
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                               1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                       260.52        314.11        361.74        404.70        444.48

ESTIMATED POPULATION IN THOUSANDS            2823          3116          3409          3650          3892

RATIO OF ACTIVE ODS PER 100,000              9.23         10.08         10.61         11.09         11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=    138.24
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                         PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR COLORADO
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CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF   COLORADO    1978 RATIO OF ODS PER 100000 POPULATION =   9.23
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   9.05
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   40.00          RETURN GRADS=   26.40
MIGRATION OF ODS TO STATE =  31.27


PROJECTED YEAR                               1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                       260.52        289.25        313.63        334.13        352.23

ESTIMATED POPULATION IN THOUSANDS            2823          3116          3409          3650          3892

RATIO OF ACTIVE ODS PER 100,000              9.23          9.28          9.20          9.15          9.05
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ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   COLORADO    1978 RATIO OF ODS PER 100000 POPULATION =   9.28
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   9.28
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   43.62          RETURN GRADS=   28.79
MIGRATION OF ODS TO STATE =  31.27


PROJECTED YEAR                               1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                       260.52        291.64        318.25        340.90        361.09

ESTIMATED POPULATION IN THOUSANDS            2823          3116          3409          3650          3892

RATIO OF ACTIVE ODS PER 100,000              9.23          9.36          9.34          9.34          9.28
----------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF   COLORADO    1978 RATIO OF ODS PER 100000 POPULATION =   9.28
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   77.67          RETURN GRADS=   51.26
MIGRATION OF ODS TO STATE =  31.27


PROJECTED YEAR                               1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                       260.52        314.11        361.74        404.70        444.48

ESTIMATED POPULATION IN THOUSANDS            2823          3116          3409          3650          3892

RATIO OF ACTIVE ODS PER 100,000              9.23         10.08         10.61         11.09         11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=    254.27
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HAWAII

In 1978 the supply of optometrists was 9.4 per 100,000 representing a slight increase from 1973 (8.8); however, this ratio is below the regional average of 11.4. The ratio of ophthalmologists is 4.3, and the combined (O.D. + M.D.) ratio is 13.7 per 100,000 (compared to the regional average of 16.4). While these data do not immediately appear favorable, the projected vision care manpower situation for Hawaii actually is very positive.

Students from Hawaii enjoy a very high level of educational opportunity (see Table 4.9). In addition, of the forty students who attended optometry school in the last five years, all of them returned. A few optometrists migrated to the state.

In terms of increase in the service requirements of the population, a growth in size will generate a 23 percent growth in the needs for vision care by 2000. The aging of the population will lead to about an 8 percent increase in needs. On these bases, it is estimated that Hawaii will need a ratio of 13.6 optometrists per 100,000 to deliver care to its population.

Optometrists in Hawaii also appear to be well distributed; because of the small area in the state, care is generally accessible. Under either set of projections--assuming no migration or that current trends continue--Hawaii will probably have a high manpower supply. Some reservations with regard to the projections are appropriate since a slight error in small numbers (of population and optometrists) can result in a relatively large error. If Hawaii wished to reach the WICHE average ratio of 11.4 by 2000, the state would need to enroll twenty-three students every five years--assuming they all would return, and no migration occurred.

Assuming migration continues, the state would need to send only nineteen students every five year period. Although it seems that the state could use a ratio of fourteen optometrists per 100,000, the state is projected to have a ratio of eighteen by 2000. A situation of oversupply may result by the year 2000 if current enrollment and return rate trends persist.

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                                        PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR HAWAII
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PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF   HAWAII       1978 RATIO OF ODS PER 100000 POPULATION =   9.37
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  16.77
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   40.00
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                                   1980           1985           1990           1995           2000

ESTIMATED ACTIVE ODS                            97.64         125.97         152.28         177.07         200.06

ESTIMATED POPULATION IN THOUSANDS                 941           1013           1086           1139           1193

RATIO OF ACTIVE ODS PER 100,000                 10.38          12.43          14.02          15.54          16.77
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PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   HAWAII       1978 RATIO OF ODS PER 100000 POPULATION =   9.37
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   9.37
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   16.23
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                                   1980           1985           1990           1995           2000

ESTIMATED ACTIVE ODS                            97.64         102.20         106.28         109.58         111.84

ESTIMATED POPULATION IN THOUSANDS                 941           1013           1086           1139           1193

RATIO OF ACTIVE ODS PER 100,000                 10.38          10.08           9.79           9.62           9.37
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PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF   HAWAII       1978 RATIO OF ODS PER 100000 POPULATION =   9.37
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   22.80
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                                   1980           1985           1990           1995           2000

ESTIMATED ACTIVE ODS                            97.64         108.78         119.01         128.25         136.24

ESTIMATED POPULATION IN THOUSANDS                 941           1013           1086           1139           1193

RATIO OF ACTIVE ODS PER 100,000                 10.38          10.73          10.96          11.25          11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=     51.63
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                         PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR HAWAII
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CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF   HAWAII      1978 RATIO OF ODS PER 100000 POPULATION =   9.37
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  18.07
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   40.00          RETURN GRADS=   40.00
MIGRATION OF ODS TO STATE =   4.19


PROJECTED YEAR                                1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                         97.64        130.16        160.39        188.97        215.60

ESTIMATED POPULATION IN THOUSANDS              941          1013          1086          1139          1193

RATIO OF ACTIVE ODS PER 100,000              10.38         12.84         14.77         16.58         18.07
------------------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   HAWAII      1978 RATIO OF ODS PER 100000 POPULATION =   9.37
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   9.37
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   12.04          RETURN GRADS=   12.04
MIGRATION OF ODS TO STATE =   4.19


PROJECTED YEAR                                1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                         97.64        102.20        106.28        109.58        111.84

ESTIMATED POPULATION IN THOUSANDS              941          1013          1086          1139          1193

RATIO OF ACTIVE ODS PER 100,000              10.38         10.08          9.79          9.62          9.37
------------------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF   HAWAII      1978 RATIO OF ODS PER 100000 POPULATION =   9.37
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   18.61          RETURN GRADS=   18.61
MIGRATION OF ODS TO STATE =   4.19


PROJECTED YEAR                                1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                         97.64        108.78        119.01        128.25        136.24

ESTIMATED POPULATION IN THOUSANDS              941          1013          1086          1139          1193

RATIO OF ACTIVE ODS PER 100,000              10.38         10.73         10.96         11.25         11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=     67.18
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IDAHO

Idaho's supply of optometrists is 12.2 per 100,000; this ratio is above the national average of 11.4. The state's supply of board certified ophthalmologists is low, 3.3 per 100,000. The combined ratio of optometrists and ophthalmologists is 15.3 (the regional average is 16.4).

Although the growth of the population, caused both by significant in-migration and by a high birth rate, will result in about a 34 percent increase in the need for care by 2000, the impact of changes in age distribution upon vision care needs will not be significant. Thus, it is estimated that a ratio of about 12.6 optometrists per 100,000 will meet the state's service needs. In terms of distribution within the state, about one-fourth of the state's forty-four counties did not have an optometrist in 1977; the largest of these counties had a population of 8,600. The large sparsely populated remote areas of the state make it difficult to provide accessible services.

The positive manpower supply reflects a number of factors. The number of optometrists migrating to Idaho has actually exceeded somewhat the number of students returning to the state. Educational opportunity for students in optometry is average for the region. For a state of this size, twenty students per five year period is a fairly large number of students. Under this enrollment trend with no in-migration of optometrists from outside the state, the ratio would drop to 11.4.

However, if the assumption is made that migration will continue as it has, the state would need to support only about two students per five year period. This state's manpower situation is somewhat similar to Hawaii: it has a relatively small population, a high level of student enrollment and an attractive lifestyle. All of these factors contribute to a positive picture for vision care.

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                     PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR IDAHO
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PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF    IDAHO        1978 RATIO OF ODS PER 100000 POPULATION =  12.18
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.41
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=    20.00
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                      117.71       123.52       128.86       133.06       136.37

ESTIMATED POPULATION IN THOUSANDS            893          977         1061         1128         1195

RATIO OF ACTIVE ODS PER 100,000            13.18        12.64        12.15        11.80        11.41
-----------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF    IDAHO        1978 RATIO OF ODS PER 100000 POPULATION =  12.18
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  12.18
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=    22.49
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                      117.71       126.01       133.67       140.12       145.60

ESTIMATED POPULATION IN THOUSANDS            893          977         1061         1128         1195

RATIO OF ACTIVE ODS PER 100,000            13.18        12.90        12.60        12.42        12.18
-----------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF    IDAHO        1978 RATIO OF ODS PER 100000 POPULATION =  12.18
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=    20.03
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                      117.71       123.55       128.91       133.14       136.47

ESTIMATED POPULATION IN THOUSANDS            893          977         1061         1128         1195

RATIO OF ACTIVE ODS PER 100,000            13.18        12.65        12.15        11.80        11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=      62.16
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                              PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR IDAHO
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CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATICN PROJECTION
STATE OF   IDAHO       1978 RATIO OF ODS PER 100000 POPULATION =  12.18
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  16.96
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   20.00        RETURN GRADS=   17.00
MIGRATION OF ODS TO STATE =  20.86



PROJECTED YEAR                              1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                      117.71        141.38        163.42        183.76        202.65

ESTIMATED POPULATION IN THOUSANDS            893           977          1061          1128          1195

RATIO OF ACTIVE ODS PER 100,000            13.18         14.47         15.40         16.29         16.96
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ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   IDAHO       1978 RATIO OF ODS PER 100000 POPULATION =  12.18
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  12.18
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=    1.91        RETURN GRADS=    1.62
MIGRATION OF ODS TO STATE =  20.86



PROJECTED YEAR                              1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                      117.71        126.01        133.67        140.11        145.59

ESTIMATED POPULATION IN THOUSANDS            893           977          1061          1128          1195

RATIO OF ACTIVE ODS PER 100,000            13.18         12.90         12.60         12.42         12.18
------------------------------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF   IDAHO       1978 RATIO OF ODS PER 100000 POPULATION =  12.18
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=    -.98        RETURN GRADS=    -.83
MIGRATION OF ODS TO STATE =  20.86



PROJECTED YEAR                              1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                      117.71        123.55        128.91        133.13        136.47

ESTIMATED POPULATION IN THOUSANDS            893           977          1061          1128          1195

RATIO OF ACTIVE ODS PER 100,000            13.18         12.65         12.15         11.80         11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=    139.56
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MONTANA

Montana has the highest ratio of optometrists in the West (15.1 per 100,000); this ratio is well above the regional average of 11.4. The state also has the lowest ratio of board certified ophthalmologists (3.3). However, the combined ratio of optometrists and ophthalmologists is 19.4, a figure well above the average supply of vision care providers. Most of Montana's vision needs are met by optometrists, and an above average supply of optometrists is probably needed.

An increase in population size for the state is projected to increase the need for vision care by 24 percent by 2000. The population is expected to remain rather young; thus an age shift will not cause a significant increase in the need for services. In terms of distribution, about sixteen of the state's fifty-seven counties did not have an optometrist in 1977; the largest of these counties had a population of 10,700. Many of the practitioners in the state serve a very large area; in addition people are quite accustomed to driving great distances to obtain goods and services.

The state has supported large numbers of optometry students (about thirty-eight in five years under the WICHE Professional Student Exchange Program. Educational opportunity is very high for Montana students (see Table 4.9). Because of high supply of optometrists in the state and the lack of practice opportunities, only about twenty-two of those students returned to practice in Montana. If the state continues to provide a high level of educational opportunity, potential students should be made aware of the limited in-state practice opportunities.

Based on the assumptions that all students from Montana return to practice, and that there is no in-migration of optometrists into the state, Montana should support about twenty-three students per five year period to maintain its current ratio in the year 2000. If the policies remain constant, an oversupply of optometrists for the state will probably correct itself--i.e., more new optometrists will choose to practice outside Montana.

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                         PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR MONTANA
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PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF   MONTANA      1978 RATIO OF ODS PER 100000 POPULATION =  15.11
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  20.63
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   37.50
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                      122.53       145.75       166.18       184.51       201.57

ESTIMATED POPULATION IN THOUSANDS            791          842          894          935          977

RATIO OF ACTIVE ODS PER 100,000            15.49        17.30        18.59        19.72        20.63
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PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   MONTANA      1978 RATIO OF ODS PER 100000 POPULATION =  15.11
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  15.11
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   22.96
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                      122.53       131.21       138.05       143.24       147.62

ESTIMATED POPULATION IN THOUSANDS            791          842          894          935          977

RATIO OF ACTIVE ODS PER 100,000            15.49        15.57        15.44        15.31        15.11
--------------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF   MONTANA      1978 RATIO OF ODS PER 100000 POPULATION =  15.11
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   13.25
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                      122.53       121.50       119.25       115.66       111.58

ESTIMATED POPULATION IN THOUSANDS            791          842          894          935          977

RATIO OF ACTIVE ODS PER 100,000            15.49        14.42        13.34        12.36        11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=     62.42
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                              PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR MONTANA
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CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF   MONTANA     1978 RATIO OF ODS PER 100000 POPULATION =  15.11
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  14.97
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   37.50          RETURN GRADS=   22.12
MIGRATION OF ODS TO STATE =     .46


PROJECTED YEAR                               1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                       122.53       130.83       137.32       142.17       146.22

ESTIMATED POPULATION IN THOUSANDS             791          842          894          935          977

RATIO OF ACTIVE ODS PER 100,000             15.49        15.53        15.36        15.20        14.97
--------------------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   MONTANA     1978 RATIO OF ODS PER 100000 POPULATION =  15.11
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  15.11
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   38.14          RETURN GRADS=   22.50
MIGRATION OF ODS TO STATE =     .46


PROJECTED YEAR                               1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                       122.53       131.21       138.05       143.24       147.62

ESTIMATED POPULATION IN THOUSANDS             791          842          894          935          977

RATIO OF ACTIVE ODS PER 100,000             15.49        15.57        15.44        15.31        15.11
--------------------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF   MONTANA     1978 RATIO OF ODS PER 100000 POPULATION =  15.11
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   21.67          RETURN GRADS=   12.79
MIGRATION OF ODS TO STATE =     .46


PROJECTED YEAR                               1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                       122.53       121.50       119.25       115.66       111.58

ESTIMATED POPULATION IN THOUSANDS             791          842          894          935          977

RATIO OF ACTIVE ODS PER 100,000             15.49        14.42        13.34        12.36        11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=     64.13
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NEVADA

The ratio of optometrists per 100,000 population dropped slightly to 8.3 from 8.7 in 1973. The ratio of ophthalmologists in the state is fairly high (4.5). The combined ratio of optometrists and ophthalmologists is 12.8, well below the regional average of 16.4. The projected supply for the state suggests that the situation will improve significantly by the year 2000.

Relatively speaking, Nevada was the most rapidly growing state from 1970 to 1977. Population projections suggest that further growth will generate nearly 40 percent more need for services by 2000. The aging of the population will result in about a 9 percent increase in needs. Optometrists also have migrated to the state along with others (about seventeen over five years). Although eight of the state's seventeen counties have no optometrists, there are many very sparsely populated spaces in the state which could not support an optometrist.

Under the WICHE program, Nevada is currently supporting about twenty-two students per five years. If no migration occurred and all students returned to the state to practice, the state would need to support about twenty students (per five years) to reach the current WICHE average ratio (11.4). Assuming that migration continues and that students are enrolled and return as they have over the past five years, the state's ratio is projected to double (16.5) by 2000. Thus, the state could afford to reduce somewhat the number of students on the basis of manpower needs. In addition, educational opportunity is also quite high for a student in this state.

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                         PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR NEVADA
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PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF   NEVADA       1978 RATIO OF ODS PER 100000 POPULATION =   8.29
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  12.70
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   22.50
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                                  1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                           58.55         74.73         89.48        102.92        115.34

ESTIMATED POPULATION IN THOUSANDS                662           731           800           854           908

RATIO OF ACTIVE ODS PER 100,000                 8.84         10.22         11.18         12.05         12.70
------------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   NEVADA       1978 RATIO OF ODS PER 100000 POPULATION =   8.29
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   8.29
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   11.71
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                                  1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                           58.55         63.94         68.61         72.30         75.31

ESTIMATED POPULATION IN THOUSANDS                662           731           800           854           908

RATIO OF ACTIVE ODS PER 100,000                 8.84          8.75          8.58          8.47          8.29
------------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF   NEVADA       1978 RATIO OF ODS PER 100000 POPULATION =   8.29
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   19.36
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                                  1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                           58.55         71.59         83.41         94.02        103.70

ESTIMATED POPULATION IN THOUSANDS                662           731           800           854           908

RATIO OF ACTIVE ODS PER 100,000                 8.84          9.79         10.43         11.01         11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=     31.85
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PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR NEVADA

CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF NEVADA 1978 RATIO OF ODS PER 100000 POPULATION = 8.29
WICHE REGION 1978 AVERAGE RATIO = 11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS = 16.50
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD= 22.50 RETURN GRADS= 14.85
MIGRATION OF ODS TO STATE = 16.93

PROJECTED YEAR	1980	1985	1990	1995	2000
ESTIMATED ACTIVE ODS	58.55	84.01	107.44	129.27	149.78
ESTIMATED POPULATION IN THOUSANDS	662	731	800	854	908
RATIO OF ACTIVE ODS PER 100,000	8.84	11.49	13.43	15.14	16.50

ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF NEVADA 1978 RATIO OF ODS PER 100000 POPULATION = 8.29
WICHE REGION 1978 AVERAGE RATIO = 11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS = 8.29
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD= -7.91 RETURN GRADS= -5.22
MIGRATION OF ODS TO STATE = 16.93

PROJECTED YEAR	1980	1985	1990	1995	2000
ESTIMATED ACTIVE ODS	58.55	63.94	68.60	72.30	75.31
ESTIMATED POPULATION IN THOUSANDS	662	731	800	854	908
RATIO OF ACTIVE ODS PER 100,000	8.84	8.75	8.58	8.47	8.29

ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF NEVADA 1978 RATIO OF ODS PER 100000 POPULATION = 8.29
WICHE REGION 1978 AVERAGE RATIO = 11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS = 11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD= 3.68 RETURN GRADS= 2.43
MIGRATION OF ODS TO STATE = 16.93

PROJECTED YEAR	1980	1985	1990	1995	2000
ESTIMATED ACTIVE ODS	58.55	71.59	83.41	94.01	103.69
ESTIMATED POPULATION IN THOUSANDS	662	731	800	854	908
RATIO OF ACTIVE ODS PER 100,000	8.84	9.79	10.43	11.01	11.42

SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION= 94.67

NEW MEXICO

In 1978 the state's ratio of optometrists was 7.4, far below the regional average of 11.4 per 100,000. The ratio of board certified ophthalmologists also was low (3.7). The combined ratio of vision care manpower was 11.2 in contrast to the region's average of 16.4. This state has a net rate of out-migration for optometrists, which may be related to the state's low per capita income and a low demand for services.

Future needs for care are expected to grow by about 32 percent by 2000 because of population growth, and by 8 percent due to the aging of the population. A ratio of 13.7 optometrists would be needed to meet these needs. It should be noted that this state has large proportions of Native Americans, Hispanic Americans, and poverty level residents. Thus the unmet need may be great, yet resources may not exist to support the appropriate use of services.

It appears that the manpower supply will significantly increase by the year 2000 if trends continue as they have. If no migration occurs and enrollments continue as they have, and all students return to the state, the ratio could increase to 13.6. If migration trends continue as they have, New Mexico will have about 11.1 optometrists per 100,000 by 2000.

Improvement in this state's vision status will not come only with an increase in vision care manpower. Thus since the manpower supply appears on track, the support of minority student recruitment and the development of alternative care delivery mechanisms may be appropriate issues for state consideration.

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                               PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR NEW MEXICO
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PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF   NEW MEXICO  1978 RATIO OF ODS PER 100000 POPULATION =   7.43
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  13.65
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   45.00
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                                1980        1985        1990        1995        2000

ESTIMATED ACTIVE ODS                        104.81      137.84      168.09      196.47      223.25

ESTIMATED POPULATION IN THOUSANDS             1249        1357        1466        1551        1636

RATIO OF ACTIVE ODS PER 100,000               8.39       10.15       11.47       12.67       13.65
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PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   NEW MEXICO  1978 RATIO OF ODS PER 100000 POPULATION =   7.43
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   7.44
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   17.62
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                                1980        1985        1990        1995        2000

ESTIMATED ACTIVE ODS                        104.81      110.46      115.10      118.73      121.64

ESTIMATED POPULATION IN THOUSANDS             1249        1357        1466        1551        1636

RATIO OF ACTIVE ODS PER 100,000               8.39        8.14        7.85        7.66        7.44
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PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF   NEW MEXICO  1978 RATIO OF ODS PER 100000 POPULATION =   7.43
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   35.19
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                                1980        1985        1990        1995        2000

ESTIMATED ACTIVE ODS                        104.81      128.03      149.10      168.62      186.84

ESTIMATED POPULATION IN THOUSANDS             1249        1357        1466        1551        1636

RATIO OF ACTIVE ODS PER 100,000               8.39        9.43       10.17       10.87       11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=     56.27
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PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR NEW MEXICO

CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF NEW MEXICO 1978 RATIO OF ODS PER 100000 POPULATION = 7.43
WICHE REGION 1978 AVERAGE RATIO = 11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS = 11.11
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD= 45.00 RETURN GRADS= 40.05
MIGRATION OF ODS TO STATE = -6.23

PROJECTED YEAR	1980	1985	1990	1995	2000
ESTIMATED ACTIVE ODS	104.81	126.66	146.46	164.73	181.76
ESTIMATED POPULATION IN THOUSANDS	1249	1357	1466	1551	1636
RATIO OF ACTIVE ODS PER 100,000	8.39	9.33	9.99	10.62	11.11

ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF NEW MEXICO 1978 RATIO OF ODS PER 100000 POPULATION = 7.43
WICHE REGION 1978 AVERAGE RATIO = 11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS = 7.44
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD= 26.79 RETURN GRADS= 23.85
MIGRATION OF ODS TO STATE = -6.23

PROJECTED YEAR	1980	1985	1990	1995	2000
ESTIMATED ACTIVE ODS	104.81	110.46	115.11	118.73	121.64
ESTIMATED POPULATION IN THOUSANDS	1249	1357	1466	1551	1636
RATIO OF ACTIVE ODS PER 100,000	8.39	8.14	7.85	7.66	7.44

ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF NEW MEXICO 1978 RATIO OF ODS PER 100000 POPULATION = 7.43
WICHE REGION 1978 AVERAGE RATIO = 11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS = 11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD= 46.54 RETURN GRADS= 41.42
MIGRATION OF ODS TO STATE = -6.23

PROJECTED YEAR	1980	1985	1990	1995	2000
ESTIMATED ACTIVE ODS	104.81	128.03	149.10	168.62	186.84
ESTIMATED POPULATION IN THOUSANDS	1249	1357	1466	1551	1636
RATIO OF ACTIVE ODS PER 100,000	8.39	9.43	10.17	10.87	11.42

SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION= 33.15

OREGON

Oregon has a ratio of 13.5 optometrists per 100,000, well above the regional average of 11.4. This is undoubtedly related to the location of the Pacific University College of Optometry in Forest Grove, near Portland. Optometrists migrate to Oregon at the rate of about ten per year; these are mostly new graduates who decide to stay after completing their education. This state also has the highest ratio of opthalmologists (5.8 in contrast to the WICHE average of 5.0). Thus the combined ratio is the highest in the West (19.8 vision care providers per 100,000). From the standpoint of manpower supply, it appears that the state should decrease the number of students supported.

From the standpoint of educational opportunity, Oregon is about average. Oregon's situation appears similar to that of Montana: if the state continues to support students at the current rate these students will need to be apprised of the lack of practice opportunities in Oregon. Indeed, of seventy students from Oregon who went to optometry school in the past five years, only about forty-one established practice in the state.

This state is not expected to experience a significant increase in needs based on age-specific projections. Furthermore, optometrists are well distributed in the state; only three of thirty-six counties have no optometrists and the populations in these counties are very small.

If all trends including migration continue, the state will have a ratio of 16.3 optometrists per 100,000 in the year 2000. If Oregon wishes to simply maintain its current ratio, it should probably send only about thirty-one students per five year period.

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                              PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR OREGON
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PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF   OREGON      1978 RATIO OF ODS PER 100000 POPULATION =  13.59
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  13.76
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   70.00
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                                1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                        352.29        370.99        388.48        405.14        422.47

ESTIMATED POPULATION IN THOUSANDS             2437          2609          2781          2925          3070

RATIO OF ACTIVE ODS PER 100,000              14.46         14.22         13.97         13.85         13.76
--------------------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   OREGON      1978 RATIO OF ODS PER 100000 POPULATION =  13.59
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  13.59
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   68.59
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                                1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                        352.29        369.58        385.75        401.14        417.24

ESTIMATED POPULATION IN THOUSANDS             2437          2609          2781          2925          3070

RATIO OF ACTIVE ODS PER 100,000              14.46         14.17         13.87         13.71         13.59
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PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF   OREGON      1978 RATIO OF ODS PER 100000 POPULATION =  13.59
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   50.63
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                                1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                        352.29        351.63        351.01        350.16        350.60

ESTIMATED POPULATION IN THOUSANDS             2437          2609          2781          2925          3070

RATIO OF ACTIVE ODS PER 100,000              14.46         13.48         12.62         11.97         11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=    162.72
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                              PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR OREGON
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CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF   OREGON      1978 RATIO OF ODS PER 100000 POPULATION =  13.59
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  16.38
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   70.00          RETURN GRADS=   41.30
MIGRATION OF ODS TO STATE =  50.35


PROJECTED YEAR                                 1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                         352.29        392.64        430.37        466.60        502.80

ESTIMATED POPULATION IN THOUSANDS              2437          2609          2781          2925          3070

RATIO OF ACTIVE ODS PER 100,000               14.46         15.05         15.48         15.95         16.38
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ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   OREGON      1978 RATIO OF ODS PER 100000 POPULATION =  13.59
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  13.59
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   30.91          RETURN GRADS=   18.24
MIGRATION OF ODS TO STATE =  50.35


PROJECTED YEAR                                 1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                         352.29        369.58        385.75        401.13        417.23

ESTIMATED POPULATION IN THOUSANDS              2437          2609          2781          2925          3070

RATIO OF ACTIVE ODS PER 100,000               14.46         14.17         13.87         13.71         13.59
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ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF   OREGON      1978 RATIO OF ODS PER 100000 POPULATION =  13.59
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=     .48          RETURN GRADS=     .28
MIGRATION OF ODS TO STATE =  50.35


PROJECTED YEAR                                 1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                         352.29        351.62        351.00        350.15        350.59

ESTIMATED POPULATION IN THOUSANDS              2437          2609          2781          2925          3070

RATIO OF ACTIVE ODS PER 100,000               14.46         13.48         12.62         11.97         11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=    349.55
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UTAH

Utah has the greatest shortage of vision care manpower in the region. In 1978 the ratio of optometrists was 6.7 per 100,000, well below the regional average of 11.4. The ratio of ophthalmologists was not particularly high (4.1). The combined ophthalmologist plus optometrist ratio was low--10.8 in comparison to an average of 16.4. In terms of distribution, thirteen of Utah's twenty-nine counties have no optometrists; in 1977 the largest of those counties had a population of about 12,100 people. Furthermore, the supply projections do not show that things will greatly improve without significant changes.

Because of a high birth rate, population growth will create a 34 percent increase in need for services by 2000. The age distribution of the population is not expected to shift and thereby increase need. Thus, on the basis of population-based needs, a ratio of 11.9 optometrists per 100,000 should be adequate.

Under both sets of manpower projections used in this WICHE report, the ratio of optometrists will remain under ten by the year 2000. If the enrollment from Utah remained at its current level (thirty-five per five years) and all these students returned and no in-migration occurred, there would be 9.8 optometrists per 100,000 in 2000. In the past five years, only about eighteen of thirty-five students returned to practice. If this low return rate and low rate of in-migration persists, the state would need to support about sixty-two students per five years to reach the regional average of 11.4 by the year 2000.

It appears that Utah does not attract optometrists--only slightly more than half of the students from the state return to practice, and there is little in-migration. This undersupply may reflect a number of factors: a low demand for vision care, a low per capita income, a low status for the profession in the state, a strong Department of Ophthalmology and residency program, a commercial element in the practice of optometry, or other unfavorable practice conditions. It appears that a large number of Utah residents are underserved, and that state policies should be carefully examined and changed if the situation is to be improved.

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                          PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR UTAH
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PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF   UTAH        1978 RATIO OF ODS PER 100000 POPULATION =   6.73
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   9.88
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   35.00
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                              1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                       95.18        116.56        137.01        156.60        175.36

ESTIMATED POPULATION IN THOUSANDS           1321          1446          1571          1673          1775

RATIO OF ACTIVE ODS PER 100,000             7.21          8.06          8.72          9.36          9.88
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PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   UTAH        1978 RATIO OF ODS PER 100000 POPULATION =   6.73
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   6.73
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   19.92
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                              1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                       95.18        101.49        107.84        113.80        119.42

ESTIMATED POPULATION IN THOUSANDS           1321          1446          1571          1673          1775

RATIO OF ACTIVE ODS PER 100,000             7.21          7.02          6.86          6.80          6.73
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PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF   UTAH        1978 RATIO OF ODS PER 100000 POPULATION =   6.73
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   42.37
MIGRATION OF ODS TO STATE =   0.00


PROJECTED YEAR                              1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                       95.18        123.93        151.27        177.53        202.71

ESTIMATED POPULATION IN THOUSANDS           1321          1446          1571          1673          1775

RATIO OF ACTIVE ODS PER 100,000             7.21          8.57          9.63         10.61         11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=      45.48
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                    PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR UTAH
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CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF   UTAH         1978 RATIO OF ODS PER 100000 POPULATION =   6.73
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   8.49
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   35.00          RETURN GRADS=   18.20
MIGRATION OF ODS TO STATE =  10.16


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                       95.18       109.92       124.16       137.75       150.72

ESTIMATED POPULATION IN THOUSANDS           1321         1446         1571         1673         1775

RATIO OF ACTIVE ODS PER 100,000             7.21         7.60         7.90         8.23         8.49
------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   UTAH         1978 RATIO OF ODS PER 100000 POPULATION =   6.73
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   6.73
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   18.78          RETURN GRADS=    9.76
MIGRATION OF ODS TO STATE =  10.16


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                       95.18       101.48       107.84       113.80       119.42

ESTIMATED POPULATION IN THOUSANDS           1321         1446         1571         1673         1775

RATIO OF ACTIVE ODS PER 100,000             7.21         7.02         6.86         6.80         6.73
------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF   UTAH         1978 RATIO OF ODS PER 100000 POPULATION =   6.73
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   61.94          RETURN GRADS=   32.21
MIGRATION OF ODS TO STATE =  10.16


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                       95.18       123.93       151.27       177.53       202.71

ESTIMATED POPULATION IN THOUSANDS           1321         1446         1571         1673         1775

RATIO OF ACTIVE ODS PER 100,000             7.21         8.57         9.63        10.61        11.42
------------------------------------------------------------------------------------------------

SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=     83.18
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WASHINGTON

In 1978 Washington's ratio of optometrists was 9.9 per 100,000, in comparison to the regional average of 11.4; the ratio for this state showed the most significant drop since 1973 when the ratio was 11.2. The ratio of ophthalmologists was 4.4, and the combined ratio (O.D. + M.D.) was 14.3 (the regional average was 16.4). In spite of the relatively low supply of optometrists in the state, all but three of thirty-nine counties seem to have an optometrist.

By 2000, the need for optometric services is projected to increase by 14 percent because of population growth, and by 4 percent because of a slight age shift in the population. On these bases, the state will need a ratio of 13.8 optometrists per 100,000 at the end of the century.

If Washington wished to attain the current regional ratio of optometrists by 2000, assuming that the rates of migration and student return continued, the state would need to support slightly more students (about 114 per five years). The rate of migration to the state seems very low for a state of this size (only thirteen over five years).

Over the past five years Washington enrolled about ninety-three students in optometry school, and about sixty of these returned to the state to practice. However, this is the only WICHE state which bases its support of students in the Professional Student Exchange Program on the individual's financial need. This policy limits the numbers of students who are accepted from this state because the school is obligated under the Professional Student Exchange Program to give some preference to WICHE certified students and tend to limit their offers to certified students. This state policy thus tends to restrict educational opportunity in optometry to students with lower incomes. It would be appropriate that a decision to support additional students could be linked to a policy to support other than only low income applicants.

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                          PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR WASHINGTON
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PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF    WASHINGTON  1978 RATIO OF ODS PER 100000 POPULATION =    9.90
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  12.01
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   92.50
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                                 1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                         382.01        413.83        442.16        469.98        499.92

ESTIMATED POPULATION IN THOUSANDS              3656          3796          3936          4048          4161

RATIO OF ACTIVE ODS PER 100,000               10.45         10.90         11.23         11.61         12.01
-------------------------------------------------------------------------------------------------------------------
PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF    WASHINGTON  1978 RATIO OF ODS PER 100000 POPULATION =    9.90
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   9.90
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   68.75
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                                 1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                         382.01        390.08        396.21        402.57        411.80

ESTIMATED POPULATION IN THOUSANDS              3656          3796          3936          4048          4161

RATIO OF ACTIVE ODS PER 100,000               10.45         10.28         10.07          9.94          9.90
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PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF    WASHINGTON  1978 RATIO OF ODS PER 100000 POPULATION =    9 90
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   85.84
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                                 1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                         382.01        407.17        429.28        451.07        475.20

ESTIMATED POPULATION IN THOUSANDS              3656          3796          3936          4048          4161

RATIO OF ACTIVE ODS PER 100,000               10.45         10.73         10.91         11.14         11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=    156.68
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                          PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR WASHINGTON
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CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF   WASHINGTON  1978 RATIO OF ODS PER 100000 POPULATION =   9.90
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  10.21
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   92.50          RETURN GRADS=   59.20
MIGRATION OF ODS TO STATE =  13.09


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                      382.01       393.62       403.06       412.61       424.93

ESTIMATED POPULATION IN THOUSANDS           3656         3796         3936         4048         4161

RATIO OF ACTIVE ODS PER 100,000            10.45        10.37        10.24        10.19        10.21
-------------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF   WASHINGTON  1978 RATIO OF ODS PER 100000 POPULATION =   9.90
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =   9.90
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   86.97          RETURN GRADS=   55.66
MIGRATION OF ODS TO STATE =  13.09


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                      382.01       390.08       396.21       402.57       411.80

ESTIMATED POPULATION IN THOUSANDS           3656         3796         3936         4048         4161

RATIO OF ACTIVE ODS PER 100,000            10.45        10.28        10.07         9.94         9.90
-------------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF   WASHINGTON  1978 RATIO OF ODS PER 100000 POPULATION =   9.90
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  113.67          RETURN GRADS=   72.7[illegible]
MIGRATION OF ODS TO STATE =  13.09


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                      382.01       407.17       429.27       451.07       475.20

ESTIMATED POPULATION IN THOUSANDS           3656         3796         3936         4048         4161

RATIO OF ACTIVE ODS PER 100,000            10.45        10.73        10.91        11.14        11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=    205.25
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WYOMING

Wyoming's supply of optometrists is 12.9 per 100,000, a ratio well above the regional average of 11.4. The state's ratio of ophthalmologists is low, however, suggesting that optometrists are particularly important in meeting the state's vision care needs. The combined ratio (O.D. + M.D.) per 100,000 is 16.5, which is average for the WICHE region. Although the current supply seems adequate, the state will soon have a surplus if current trends continue.

According to the census bureau, the state's population growth will be great, and this growth will generate a 30 percent increase in the need for services by 2000. It should be noted that the state estimates that its population already exceeds the 1980 census bureau projections. Thus some of the population numbers used in our projections may be low and the optometrist to population ratios may be somewhat exaggerated. In fact, some rural and remote areas may need optometrists. Since a large amount of the vision care needs are met by optometrists in the smaller communities, a higher ratio of optometrists may be warranted. On the basis of the aging of the population, an 8 percent increase in optometric needs is projected by the year 2000.

During recent years Wyoming has supported a great number (forty per five years) of students in optometry school through bilateral contracts. Thus educational opportunity is very high. About three-fourths of these students appear to return to practice in the state. In addition, about eighteen optometrists migrated to Wyoming over five years.

Under both sets of assumptions the WICHE projections show that Wyoming will be oversupplied with optometrists by 2000. To maintain its current ratio, if all students returned to the state and no in-migration occurred, the state would need to support only about seven students in five years. If migration continued, the state would not need to support any students. In order to provide for educational opportunity, the state would clearly need to continue to support some students, however.

While the population figures used in these projections may be low, the projected ratios of optometrists are so high (thirty-six per 100,000 under assumption one and forty under assumption two) that it is clear Wyoming's support of students is in excess of the state's manpower needs.

This level of student support reflects the policy of the state's legislature to provide educational opportunities to qualified students in the professions, regardless of in-state need. Those graduating students who cannot find practice opportunities in Wyoming will no doubt contribute to the growth of the vision care manpower in the rest of the region. Unless the state's primary objective is to provide educational access, it appears decision makers might consider a decrease of support for students in optometry.

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                                 PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR WYOMING
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PROJECTIONS UNDER ZERO MIGRATION ASSUMPTION AND CURRENT ENROLLMENT TREND
STATE OF    WYOMING      1978 RATIO OF ODS PER 100000 POPULATION =  12.97
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  36.25
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   40.00
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                                     1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                              70.98        103.66        134.50        163.78        191.05

ESTIMATED POPULATION IN THOUSANDS                   408           441           474           500           527

RATIO OF ACTIVE ODS PER 100,000                   17.40         23.51         28.38         32.72         36.25
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PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF    WYOMING      1978 RATIO OF ODS PER 100000 POPULATION =  12.97
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  12.97
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=    6.94
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                                     1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                              70.98         70.60         70.52         69.92         68.36

ESTIMATED POPULATION IN THOUSANDS                   408           441           474           500           527

RATIO OF ACTIVE ODS PER 100,000                   17.40         16.01         14.88         13.97         12.97
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PROJECTIONS UNDER ZERO MIGRATION AND ENROLLMENT TO OBTAIN WICHE REGION RATIO
STATE OF    WYOMING      1978 RATIO OF ODS PER 100000 POPULATION =  12.97
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=    4.73
MIGRATION OF ODS TO STATE =    0.00


PROJECTED YEAR                                     1980          1985          1990          1995          2000

ESTIMATED ACTIVE ODS                              70.98         68.40         66.26         63.66         60.18

ESTIMATED POPULATION IN THOUSANDS                   408           441           474           500           527

RATIO OF ACTIVE ODS PER 100,000                   17.40         15.51         13.98         12.72         11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=      42.62
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                         PROJECTIONS OF ACTIVE ODS TO YEAR 2000 FOR WYOMING
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CURRENT ENROLLMENT,ESTIMATED RETURN, ADJUSTED CURRENT TREND MIGRATION PROJECTION
STATE OF    WYOMING      1978 RATIO OF ODS PER 100000 POPULATION =  12.97
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  40.13
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=   40.00         RETURN GRADS=   28.00
MIGRATION OF ODS TO STATE =  17.51


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                       70.98       109.17       145.16       179.43       211.50

ESTIMATED POPULATION IN THOUSANDS            408          441          474          500          527

RATIO OF ACTIVE ODS PER 100,000            17.40        24.76        30.62        35.85        40.13
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ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO KEEP PRESENT RATIO
STATE OF    WYOMING      1978 RATIO OF ODS PER 100000 POPULATION =  12.97
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  12.97
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  -15.11         RETURN GRADS=  -10.57
MIGRATION OF ODS TO STATE =  17.51


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                       70.98        70.60        70.52        69.91        68.36

ESTIMATED POPULATION IN THOUSANDS            408          441          474          500          527

RATIO OF ACTIVE ODS PER 100,000            17.40        16.01        14.88        13.97        12.97
----------------------------------------------------------------------------------------------------------
ESTIMATED RETURN AND MIGRATION AND ENROLLMENT TO OBTAIN WICHE RATIO
STATE OF    WYOMING      1978 RATIO OF ODS PER 100000 POPULATION =  12.97
WICHE REGION 1978 AVERAGE RATIO =  11.42
PROJECTED RATIO FOR YEAR 2000 UNDER THE FOLLOWING CONDITIONS =  11.42
NUMBER OF STATE STUDENTS ENROLLED EACH 5 YEAR PERIOD=  -16.25         RETURN GRADS=  -1[illegible].78
MIGRATION OF ODS TO STATE =  17.51


PROJECTED YEAR                              1980         1985         1990         1995         2000

ESTIMATED ACTIVE ODS                       70.98        68.40        66.26        63.66        60.18

ESTIMATED POPULATION IN THOUSANDS            408          441          474          500          527

RATIO OF ACTIVE ODS PER 100,000            17.40        15.51        13.98        12.72        11.42
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SUPPLY IN YEAR 2000 UNDER ZERO GRAD ASSUMPTION=    107.60
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FOOTNOTES

Chapter VI

1. Wong, John C. *Health Manpower Study of Selected Health Professions in California*. A Report Prepared for the California Postsecondary Education Commission, 1976. p. 501.

APPENDIX A

DISTRIBUTION OF OPTOMETRISTS AND OPHTHALMOLOGISTS BY COUNTY FOR WICHE STATES

ALASKA

TABLE 1

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MANPOWER BY COUNTY*(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
ALEUTIAN ISLANDS	8000	0.0	0.0	0.0	0.0	0.0
ANCHORAGE	181400	10.5	5.8	11.0	6.1	1.0
ANGOON	900	0.0	0.0	0.0	0.0	0.0
BARROW-NORTH SLOPE	4500	0.0	0.0	0.0	0.0	0.0
BETHEL	9600	0.0	0.0	0.0	0.0	0.0
BRISTOL BAY BOROUGH	1300	0.0	0.0	0.0	0.0	0.0
BRISTOL BAY	4200	0.0	0.0	0.0	0.0	0.0
CORDOVA-MCCARTHY	2400	0.0	0.0	0.0	0.0	0.0
FAIRBANKS	55100	5.0	9.1	3.0	5.4	.6
HAINES	1800	0.0	0.0	0.0	0.0	0.0
JUNEAU	19100	2.0	10.5	2.0	10.5	1.0
KENAI-COOK INLET	20100	2.0	10.0	0.0	0.0	0.0
KETCHIKAN	11100	3.0	27.0	0.0	0.0	0.0
KOBUK	4800	0.0	0.0	0.0	0.0	0.0
KODIAK	9900	1.0	10.1	0.0	0.0	0.0
KUSKOKWIN	2800	0.0	0.0	0.0	0.0	0.0
MATANUSKA-SUSITNA	14200	3.0	21.1	0.0	0.0	0.0
NOME	7000	0.0	0.0	0.0	0.0	0.0
OUTER KETCHIKAN	1900	0.0	0.0	0.0	0.0	0.0
PRINCE OF WALES	3000	0.0	0.0	0.0	0.0	0.0

*Alaska does not have county designations; therefore these are divisions used by the Census Bureau.

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
SEWARD	3000	0.0	0.0	0.0	0.0	0.0
SITKA	7000	1.0	14.3	0.0	0.0	0.0
SKAGWAY-YAKUTAT	2700	0.0	0.0	0.0	0.0	0.0
SOUTHEAST FAIRBANKS	5300	0.0	0.0	0.0	0.0	0.0
UPPER YUKON	1600	0.0	0.0	0.0	0.0	0.0
VALDEZ-CHITINA-WHIT.	8200	.5	6.1	0.0	0.0	0.0
WADE-HAMPTON	4800	0.0	0.0	0.0	0.0	0.0
WRANGELL-PETERSBURG	5600	0.0	0.0	0.0	0.0	0.0
YUKON-KOYUKUK	5900	0.0	0.0	0.0	0.0	0.0
TOTALS	407200	28.0	6.9	16.0	3.9	.6
MEAN RATIOS			3.9		.8	.1
VARIANCE OF RATIOS			49.9		5.7	.1

SOURCES
ODS - 1978 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

ARIZONA

TABLE 2

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MANPOWER BY COUNTY(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
APACHE	43900	1.0	2.3	0.0	0.0	0.0
COCHISE	75400	7.0	9.3	3.0	4.0	.4
COCONINO	66300	8.0	12.1	4.0	6.0	.5
GILA	32900	4.0	12.2	0.0	0.0	0.0
GRAHAM	20200	3.0	14.9	0.0	0.0	0.0
GREENLEE	11000	1.0	9.1	0.0	0.0	0.0
MARICOPA	1253600	115.0	9.2	86.0	6.9	.7
MOHAVE	40400	4.0	9.9	2.0	5.0	.5
NAVAJO	61300	6.0	9.8	0.0	0.0	0.0
PIMA	454600	39.0	8.6	29.0	6.4	.7
PINAL	88300	7.0	7.9	0.0	0.0	0.0
SANTA CRUZ	17900	1.0	5.6	0.0	0.0	0.0
YAVAPAI	56300	6.0	10.7	2.0	3.6	.3
YUMA	73600	6.0	8 2	3.0	4.1	.5
TOTALS	2295700	208.0	9.1	129.0	5.6	.6
MEAN RATIOS			9.3		2.6	.3
VARIANCE OF RATIOS			8.3		7.8	.1

SOURCES
ODS - 1978 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

CALIFORNIA

TABLE 3

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MANPOWER BY COUNTY(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
ALAMEDA	1102100	196.5	17.8	52.5	4.8	.3
ALPINE	900	0.0	0.0	0.0	0.0	0.0
AMADOR	16300	1.5	9.2	0.0	0.0	0.0
BUTTE	127800	20.5	16.0	9.0	7.0	.4
CALAVERAS	16900	3.5	20.7	0.0	0.0	0.0
COLUSA	12900	1.0	7.8	0.0	0.0	0.0
CONTRA COSTA	613000	77.0	12.6	27.5	4.5	.4
DEL NORTE	16300	2.0	12.3	0.0	0.0	0.0
EL DORADO	68500	10.0	14.6	1.0	1.5	.1
FRESNO	471900	69.0	14.6	21.0	4.5	.3
GLENN	20200	2.0	9.9	0.0	0.0	0.0
HUMBOLDT	106700	9.0	8.4	5.0	4.7	.6
IMPERIAL	88400	6.0	6.8	1.0	1.1	.2
INYO	17900	2.0	11.2	1.0	5.6	.5
KERN	363000	43.0	11.8	10.5	2.9	.2
KINGS	71100	12.0	16.9	2.0	2.8	.2
LAKE	28700	4.0	13.9	0.0	0.0	0.0
LASSEN	19400	4.0	20.6	0.0	0.0	0.0
LOS ANGELES	7031000	1268.0	16.0	388.0	5.5	.3
MADERA	50700	5.0	9.9	0.0	0.0	0.0

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
MARIN	223800	32.0	14.3	18.5	8.3	.6
MARIPOSA	9200	1.0	10.9	0.0	0.0	0.0
MENDOCINO	60800	2.0	3.3	4.0	6.6	2.0
MERCED	124300	10.0	8.0	2.5	2.0	.3
MODOC	8600	1.0	11.6	0.0	0.0	0.0
MONO	7400	1.0	13.5	0.0	0.0	0.0
MONTEREY	274900	27.0	9.8	18.0	6.5	.7
NAPA	91900	13.0	14.1	7.0	7.6	.5
NEVADA	39400	5.0	12.7	3.0	7.6	.6
ORANGE	1800800	303.3	16.8	76.0	4.2	.3
PLACER	100700	12.0	11.9	4.5	4.5	.4
PLUMAS	14800	1.0	6.8	0.0	0.0	0.0
RIVERSIDE	570200	59.5	10.4	20.0	3.5	.3
SACRAMENTO	722000	102.0	14.1	43.5	6.0	.4
SAN BENITO	21100	3.0	14.2	1.0	4.7	.3
SAN BERNADINO	735400	88.3	12.0	79.5	10.8	.9
SAN DIEGO	1683000	243.0	14.4	105.0	6.2	.4
SAN JOAQUIN	311400	48.5	15.6	10.0	3.2	.2
SAN FRANCISCO	654400	152.0	23.2	31.5	4.8	.2
SAN LUIS OBISPO	135700	21.0	15.5	8.0	5.9	.4

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
SAN MATEO	588800	63.0	10.7	47.5	8.1	.8
SANTA BARBARA	287400	42.0	14.6	26.0	9.0	.6
SANTA CLARA	1217300	144.0	11.8	74.0	6.1	.5
SANTA CRUZ	169200	30.5	18.0	10.0	5.9	.3
SHASTA	98000	3.6	3.7	4.0	4.1	1.1
SIERRA	3100	0.0	0.0	0.0	0.0	0.0
SISKIYOU	36600	6.3	17.2	0.0	0.0	0.0
SOLANO	202000	23.0	11.4	3.5	1.7	.2
SONOMA	263200	35.0	13.3	17.0	6.5	.5
STANISLAUS	236000	37.0	15.7	8.5	3.6	.2
SUTTER	48000	5.5	11.5	1.0	2.1	.2
TEHAMA	33900	1.0	2.9	1.0	2.9	1.0
TRINITY	10700	1.0	9.3	0.0	0.0	0.0
TULARE	217400	21.5	9.9	7.0	3.2	.3
TUOLOMNE	28800	6.0	20.8	0.0	0.0	0.0
VENTURA	467800	111.0	23.7	17.5	3.7	.2
YOLO	106700	14.0	13.1	4.0	3.7	.3
YUBA	47500	4.0	8.4	2.5	5.3	.6
TOTALS	21895900	3410.0	15.6	1174.0	5.4	.3
MEAN RATIOS			12.5		3.5	.3
VARIANCE OF RATIOS			25.3		8.5	.1

SOURCES
ODS - 1978 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

COLORADO

TABLE 4

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MANPOWER BY COUNTY(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
ADAMS	223200	23.0	10.3	3.0	1.3	.1
ALAMOSA	11900	3.0	25.2	0.0	0.0	0.0
ARAPAHOE	239100	19.0	7.9	5.0	2.1	.3
ARCHULETA	3600	0.0	0.0	0.0	0.0	0.0
BACA	5600	0.0	0.0	0.0	0.0	0.0
BENT	6400	1.0	15.6	0.0	0.0	0.0
BOULDER	169200	21.5	12.7	8.5	5.0	.4
CHAFEE	12300	3.0	24.4	1.0	8.1	.3
CHEYENNE	2000	0.0	0.0	0.0	0.0	0.0
CLEAR CREEK	5300	0.0	0.0	0.0	0.0	0.0
CONEJOS	8200	0.0	0.0	0.0	0.0	0.0
COSTILLA	3200	0.0	0.0	0.0	0.0	0.0
CROWLEY	3100	0.0	0.0	0.0	0.0	0.0
CUSTER	1300	0.0	0.0	0.0	0.0	0.0
DELTA	19000	2.0	10.5	0.0	0.0	0.0
DENVER	476000	65.0	13.7	57.0	12.0	.9
DOLORES	1500	1.0	66.7	0.0	0.0	0.0
DOUGLAS	19000	2.0	10.5	.5	2.6	.3
EAGLE	12100	1.0	8.3	0.0	0.0	0.0
ELBERT	6000	0.0	0.0	0.0	0.0	0.0

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
EL PASO	282100	15.0	5.3	17.0	6.0	1.1
FREMONT	26200	3.0	11.5	1.0	3.8	.3
GARFIELD	19000	5.0	26.3	1.0	5.3	.2
GILPIN	2100	0.0	0.0	0.0	0.0	0.0
GRAND	6100	0.0	0.0	0.0	0.0	0.0
GUNNISON	8700	2.0	23.0	0.0	0.0	0.0
HINSDALE	500	0.0	0.0	0.0	0.0	0.0
HUERFANO	6600	2.0	30.3	0.0	0.0	0.0
JACKSON	1800	0.0	0.0	0.0	0.0	0.0
JEFFERSON	335500	24.0	7.2	8.5	2.5	.4
KIOWA	1900	0.0	0.0	0.0	0.0	0.0
KIT CARSON	7800	2.0	25.6	0.0	0.0	0.0
LAKE	8300	2.0	24.1	0.0	0.0	0.0
LA PLATA	24700	4.0	16.2	2.0	8.1	.5
LARIMER	125000	16.5	13.2	8.5	6.8	.5
LAS ANIMAS	15900	1.0	6.3	0.0	0.0	0.0
LINCOLN	4700	2.0	42.6	0.0	0.0	0.0
LOGAN	20000	3.0	15.0	2.0	10.0	.7
MESA	67300	5.5	8.2	5.0	7.4	.9
MINERAL	800	0.0	0.0	0.0	0.0	0.0

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
MOFFAT	10400	2.0	19.2	0.0	0.0	0.0
MONTEZUMA	15100	3.0	19.9	1.0	6.6	.3
MONTROSE	22200	3.0	13.5	0.0	0.0	0.0
MORGAN	21500	5.0	23.3	0.0	0.0	0.0
OTERO	23700	4.0	16.9	0.0	0.0	0.0
OURAY	1900	0.0	0.0	0.0	0.0	0.0
PARK	4500	0.0	0.0	0.0	0.0	0.0
PHILLIPS	4400	0.0	0.0	0.0	0.0	0.0
PITKIN	10300	2.0	19.4	0.0	0.0	0.0
PROWERS	13700	2.0	14.6	0.0	0.0	0.0
PUEBLO	122700	11.0	9.0	8.0	6.5	.7
RIO BLANCA	5100	1.0	19.5	0.0	0.0	0.0
RIO GRANDE	10600	0.0	0.0	0.0	0.0	0.0
ROUTT	10700	3.0	28 0	0.0	0.0	0.0
SAGUACHE	4000	0.0	0.0	0.0	0.0	0.0
SAN JUAN	800	0.0	0.0	0.0	0.0	0.0
SAN MIGUEL	2500	.5	20.0	0.0	0.0	0.0
SEDGEWICK	3300	0.0	0.0	0.0	0.0	0.0
SUMMIT	6300	1.0	15.9	0.0	0.0	0.0
TELLER	6200	.5	8.1	0.0	0.0	0.0

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
WASHINGTON	5500	0.0	0.0	0.0	0.0	0.0
WELD	110300	10.0	9.1	4.0	3.6	.4
YUMA	9600	1.0	10.4	0.0	0.0	0.0
TOTALS	2618300	277.5	10.6	133.0	5.1	.5
MEAN RATIOS			11.2		1.6	.1
VARIANCE OF RATIOS			152.6		8.8	.1

SOURCES
ODS - 1978 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

HAWAII

TABLE 5

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MANPOWER BY COUNTY(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
HAWAII	79200	6.0	7.6	2.0	2.5	.3
HONOLULU	717600	70.0	9.8	34.0	4.7	.5
KAUAI	34400	6.0	17.4	1.0	2.9	.2
MAUI	60300	3.0	5 0	2.0	3.3	.7
TOTALS	891500	85.0	9.5	39.0	4.4	.5
MEAN RATIOS			9.9		3.4	.4
VARIANCE OF RATIOS			28.9		.9	.0

SOURCES
ODS - 1978 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

IDAHO

TABLE 6

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MAN-POWER BY COUNTY(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
ADA	145000	17.0	11.7	8.0	5.5	.5
ADAMS	3300	0.0	0.0	0.0	0.0	0.0
BANNOCK	61500	8.0	13.0	4.0	6.5	.5
BEAR LAKE	7100	.5	7.0	0.0	0.0	0.0
BENEWAH	7500	0.0	0.0	0.0	0.0	0.0
BINGHAM	35200	2.0	5.7	0.0	0.0	0.0
BLAINE	8800	1.5	17.0	0.0	0.0	0.0
BOISE	2400	0.0	0.0	0.0	0.0	0.0
BONNER	21000	2.0	9.5	0.0	0.0	0.0
BONNEVILLE	61000	9.0	14.8	2.0	3.3	.2
BOUNDARY	6400	2.0	31.3	0.0	0.0	0.0
BUTTE	3300	0.0	0.0	0.0	0.0	0.0
CAMAS	800	0.0	0.0	0.0	0.0	0.0
CANYON	75400	10.0	13.3	4.0	5.3	.4
CARIBOU	8300	.5	6.0	0.0	0.0	0.0
CASSIA	19300	3.0	15.5	0.0	0.0	0.0
CLARK	900	0.0	0.0	0.0	0.0	0.0
CLEARWATER	9800	3.0	30.6	0.0	0.0	0.0
CUSTER	3300	0.0	0.0	0.0	0.0	0.0
ELMORE	21000	2.0	9.5	0.0	0.0	0.0

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
FRANKLIN	8600	0.0	0.0	0.0	0.0	0.0
FREMONT	10500	1.0	9.5	0.0	0.0	0.0
GEM	11000	3.0	27.3	0.0	0.0	0.0
GOODING	10900	1.0	9.2	0.0	0.0	0.0
IDAHO	13100	2.0	15.3	0.0	0.0	0.0
JEFFERSON	13900	2.0	14.4	0.0	0.0	0.0
JEROME	14000	2.5	17.9	0.0	0.0	0.0
KOOTENAI	49400	8.0	16.2	8.0	16.2	1.0
LATAH	27200	3.0	11.0	0.0	0.0	0.0
LEMHI	6900	1.0	14.5	0.0	0.0	0.0
LEWIS	4200	1.0	23.8	0.0	0.0	0.0
LINCOLN	3500	0.0	0.0	0.0	0.0	0.0
MADISON	17600	3.0	17.0	0.0	0.0	0.0
MINIDOKA	19100	4.0	20.9	0.0	0.0	0.0
NEZ PEARCE	30100	9.0	29.9	2.0	6.6	.2
ONEIDA	3400	0.0	0.0	0.0	0.0	0.0
OWYHEE	7700	0.0	0.0	0.0	0.0	0.0
PAYETTE	15100	1.5	9.9	1.0	6.6	.7
POWER	6100	1.0	16.4	0.0	0.0	0.0
SHOSHONE	18800	4.0	21.3	0.0	0.0	0.0

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
TETON	2600	1.0	38.5	0.0	0.0	0.0
TWIN FALLS	48000	1.0	2.1	0.0	0.0	0.0
VALLEY	4600	1.0	21.7	0.0	0.0	0.0
WASHINGTON	8900	2.5	28.1	0.0	0.0	0.0
TOTALS	856500	113.0	13.2	29.0	3.4	.3
MEAN RATIOS			12.3		1.1	.1
VARIANCE OF RATIOS			107.0		9.4	.0

SOURCES
ODS - 1975 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

MONTANA

TABLE 7

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MANPOWER BY COUNTY(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
BEAVERHEAD	8200	3.0	36.6	0.0	0.0	0.0
BIG HORN	10700	0.0	0.0	0.0	0.0	0.0
BLAINE	7000	0.0	0.0	0.0	0.0	0.0
BROADWATER	3100	.5	16.1	0.0	0.0	0.0
CARBON	8200	1.0	12.2	0.0	0.0	0.0
CARTER	1800	0.0	0.0	0.0	0.0	0.0
CASCADE	84400	11.0	13.0	6.0	7.1	.5
CHOUTEAU	6500	1.0	15.4	0.0	0.0	0.0
CUSTER	13100	1.5	11.5	1.0	7.6	.7
DANIELS	3100	1.0	32.3	0.0	0.0	0.0
DAWSON	11400	3.0	26.3	0.0	0.0	0.0
DEER LODGE	14300	2.0	14.0	0.0	0.0	0.0
FALLON	4000	1.0	25.0	0.0	0.0	0.0
FERGUS	13300	4.0	30.1	0.0	0.0	0.0
FLATHEAD	46400	9.5	20.5	3.0	6.5	.3
GALLATIN	38500	4.5	11.7	3.0	7.8	.7
GARFIELD	1800	0.0	0.0	0.0	0.0	0.0
GLACIER	10900	3.0	27.5	0.0	0.0	0.0
GOLDEN VALLEY	900	0.0	0.0	0.0	0.0	0.0
GRANITE	2700	0.0	0.0	0.0	0.0	0.0

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
HILL	18300	5.0	27.3	0.0	0.0	0.0
JEFFERSON	7100	0.0	0.0	0.0	0.0	0.0
JUDITH BASIN	2800	0.0	0.0	0.0	0.0	0.0
LAKE	17600	3.5	19.9	0.0	0.0	0.0
LEWIS + CLARK	39300	7.5	19.1	3.0	7.6	.4
LIBERTY	2600	1.5	57.7	0.0	0.0	0.0
LINCOLN	16700	2.0	12.0	0.0	0.0	0.0
MCCONE	2800	1.0	35.7	0.0	0.0	0.0
MADISON	5700	.5	8.8	0.0	0.0	0.0
MEAGHER	2200	0.0	0.0	0.0	0.0	0.0
MINERAL	3400	0.0	0.0	0.0	0.0	0.0
MISSOULA	66800	7.0	10.5	5.0	7.5	.7
MUSSELSHELL	4700	1.0	21.3	0.0	0.0	0.0
PARK	12500	4.0	32.0	0.0	0.0	0.0
PETROLEUM	700	0.0	0.0	0.0	0.0	0.0
PHILLIPS	5400	1.0	18.5	0.0	0.0	0.0
PONDERA	7400	2.0	27.0	0.0	0.0	0.0
POWDER RIVER	2400	0.0	0.0	0.0	0.0	0.0
POWELL	7400	1.0	13.5	0.0	0.0	0.0
PRAIRIE	1800	0.0	0.0	0.0	0.0	0.0

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
RAVALLI	19300	3.0	15.5	0.0	0.0	0.0
RICHLAND	10200	2.0	19.6	0.0	0.0	0.0
ROOSEVELT	10600	2.0	18.9	0.0	0.0	0.0
ROSEBUD	10500	.5	4.8	0.0	0.0	0.0
SANDERS	8400	1.0	11.9	0.0	0.0	0.0
SHERIDAN	5200	1.0	19.2	0.0	0.0	0.0
SILVER BOW	40200	7.0	17.4	1.0	2.5	.1
STILLWATER	5300	1.0	18.9	0.0	0.0	0.0
SWEET GRASS	3100	1.0	32.3	0.0	0.0	0.0
TETON	6500	1.0	15.4	0.0	0.0	0.0
TOOLE	5500	1.5	27.3	0.0	0.0	0.0
TREASURE	1300	0.0	0.0	0.0	0.0	0.0
VALLEY	12600	2.0	15.9	0.0	0.0	0.0
WHEATLAND	2400	2.0	83.3	0.0	0.0	0.0
WILBAUX	1500	0.0	0.0	0.0	0.0	0.0
YELLOWSTONE	100700	11.0	10.9	11.0	10.9	1.0
YELLOWSTONE NAT. PK.	100	0.0	0.0	0.0	0.0	0.0
TOTALS	761300	119.0	15.6	33.0	4.3	.3
MEAN RATIOS			15.9		1.0	.1
VARIANCE OF RATIOS			237.9		7.0	.0

SOURCES
ODS - 1978 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

NEVADA

TABLE 8

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MANPOWER BY COUNTY(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
CHURCHILL	12180	.5	4.1	0.0	0.0	0.0
CLARK	360935	32.0	8.9	12.0	3.3	.4
DOUGLAS	12919	1.0	7.7	1.0	7.7	1.0
ELKO	15114	1.0	6.6	0.0	0.0	0.0
ESMERALDA	730	0.0	0.0	0.0	0.0	0.0
EUREKA	948	0.0	0.0	0.0	0.0	0.0
HUMBOLDT	7324	1.0	13.7	0.0	0.0	0.0
LANDER	3329	0.0	0.0	0.0	0.0	0.0
LINCOLN	2876	0.0	0.0	0.0	0.0	0.0
LYON	10873	.5	4.6	0.0	0.0	0.0
MINERAL	5833	0.0	0.0	0.0	0.0	0.0
NYE	6097	0.0	0.0	0.0	0.0	0.0
PERSHING	2866	0.0	0.0	0.0	0.0	0.0
STOREY	1128	0.0	0.0	0.0	0.0	0.0
WASHOE	157826	19.0	12.0	15.0	9.5	.8
WHITE PINE	8841	1.0	11.3	0.0	0.0	0.0
CARSON CITY	27145	3.0	11.1	2.0	7.4	.7
TOTALS	636964	59.0	9.3	30.0	4.7	.5
MEAN RATIOS			4.7		1.6	.2
VARIANCE OF RATIOS			26.6		10.6	.1

SOURCES
ODS - 1978 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

NEW MEXICO

TABLE 9

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MANPOWER BY COUNTY(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
BERNALILLO	377900	30.0	7.9	25.0	6.6	.8
CATRON	2500	0.0	0.0	0.0	0.0	0.0
CHAVES	49300	6.0	12.2	2.0	4.1	.3
COLFAX	12800	1.0	7.8	1.0	7.8	1.0
CURRY	41100	6.5	15.8	1.0	2.4	.2
DEBACA	2500	.5	20.0	0.0	0.0	0.0
DONA ANA	83900	5.0	6.0	1.0	1.2	.2
EDDY	45500	5.0	11.0	0.0	0.0	0.0
GRANT	24500	3.0	12.2	1.0	4.1	.3
GUADALUPE	4900	0.0	0.0	0.0	0.0	0.0
HARDING	1200	0.0	0.0	0.0	0.0	0.0
HIDALGO	6200	0.0	0.0	0.0	0.0	0.0
LEA	52900	5.0	9.5	2.0	3.8	.4
LINCOLN	10300	1.0	9.7	0.0	0.0	0.0
LOS ALAMOS	17100	2.0	11.7	1.0	5.8	.5
LUNA	14400	1.0	6.9	0.0	0.0	0.0
MCKINLEY	56100	5.0	8.9	3.0	5.3	.6
MORA	4800	0.0	0.0	0.0	0.0	0.0
OTERO	42300	3.0	7.1	1.0	2.4	.3
QUAY	11200	1.0	8.9	0.0	0.0	0.0

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
RIO ARRIBA	27600	1.0	3.6	.5	1.8	.5
ROOSEVELT	16500	1.0	6.1	0.0	0.0	0.0
SANDOVAL	24000	0.0	0.0	0.0	0.0	0.0
SAN JUAN	70800	7.0	9.9	2.0	2.8	.3
SAN MIGUEL	22700	1.0	4.4	1.0	4.4	1.0
SANTE FE	65200	6.0	9.2	4.5	6.9	.8
SIERRA	8800	1.0	11.4	0.0	0.0	0.0
SOCORRO	9900	1.0	10.1	0.0	0.0	0.0
TAOS	19800	2.0	10.1	0.0	0.0	0.0
TORRANCE	6800	0.0	0.0	0.0	0.0	0.0
UNION	4900	1.0	20.4	0.0	0.0	0.0
VALENCIA	51400	4.0	7.8	0.0	0.0	0.0
TOTALS	1189800	100.0	8.4	46.0	3.9	.5
MEAN RATIOS			7.8		1.9	.2
VARIANCE OF RATIOS			30.2		6.3	.1

SOURCES
ODS - 1978 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

OREGON

TABLE 10

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MANPOWER BY COUNTY(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
BAKER	15800	3.0	19.0	0.0	0.0	0.0
BENTON	64600	9.0	13.9	3.0	4.6	.3
CLACKAMAS	211200	26.5	12.3	9.0	4.3	.3
CLATSOP	29400	5.0	17.0	1.0	3.4	.2
COLUMBIA	33300	4.0	12.0	0.0	0.0	0.0
COOS	60900	6.0	9.9	3.0	4.9	.5
CROOK	11900	2.0	16.8	0.0	0.0	0.0
CURRY	14600	2.0	13.7	0.0	0.0	0.0
DESCHUTES	47400	10.0	21.1	5.0	10.5	.5
DOUGLAS	84800	9.5	11.2	3.0	3.5	.3
GILLIAM	2100	0.0	0.0	0.0	0.0	0.0
GRANT	7400	1.0	13.5	0.0	0.0	0.0
HARNEY	7700	1.0	13.0	0.0	0.0	0.0
HOOD RIVER	14600	3.0	20 5	0.0	0.0	0.0
JACKSON	118400	13.0	11.0	4.5	3.8	.3
JEFFERSON	10100	2.0	19.8	0.0	0.0	0.0
JOSEPHINE	51300	6.0	11.7	3.5	6.8	.6
KLAMATH	56200	7.0	12.5	2.0	3.6	.3
LAKE	6700	1.0	14.9	0.0	0.0	0.0
LANE	248900	33.5	13.5	10.0	4.0	.3

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
LINCOLN	28700	7.0	24.4	1.5	5.2	.2
LINN	84000	14.5	17.3	4.0	4.8	.3
MALHEUR	24900	5.0	20.1	1.0	4.0	.2
MARION	176400	26.5	15.0	11.0	6.2	.4
MORROW	5800	1.0	17.2	0.0	0.0	0.0
MULTNOMAH	546200	88.0	16.1	68.0	12.4	.8
POLK	40700	4.0	9.8	0.0	0.0	0.0
SHERMAN	2100	0.0	0.0	0.0	0.0	0.0
TILLAMOOK	18700	3.0	16.0	0.0	0.0	0.0
UMATILLA	51700	7.0	13.5	2.0	3.9	.3
UNION	22500	3.0	13.3	2.0	8.9	.7
WALLOWA	6800	2.0	29.4	0.0	0.0	0.0
WASCO	20300	5.0	24.6	2.0	9.9	.4
WASHINGTON	201100	51.0	25.4	4.0	2.0	.1
WHEELER	1900	0.0	0.0	0.0	0.0	0.0
YAMHILL	47200	7.0	14.8	2.5	5.3	.4
TOTALS	2376300	368.5	15.5	142.0	6.0	.4
MEAN RATIOS			14.8		3.1	.2
VARIANCE OF RATIOS			41.3		12.1	.0

SOURCES
ODS - 1978 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

UTAH

TABLE 11

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MANPOWER BY COUNTY(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
BEAVER	4000	0.0	0.0	0.0	0.0	0.0
BOX ELDER	30600	3.0	9.8	0.0	0.0	0.0
CACHE	49500	4.0	8.1	3.0	6.1	.8
CARBON	20700	3.0	14.5	1.0	4.8	.3
DAGGETT	800	0.0	0.0	0.0	0.0	0.0
DAVIS	122200	12.5	10.2	2.0	1.6	.2
DUCHENSE	12400	1.0	8.1	0.0	0.0	0.0
EMERY	9100	0.0	0.0	0.0	0.0	0.0
GARFIELD	3500	0.0	0.0	0.0	0.0	0.0
GRAND	7000	1.0	14.3	0.0	0.0	0.0
IRON	15300	2.0	13.1	1.0	6.5	.5
JUAB	5100	0.0	0.0	0.0	0.0	0.0
KANE	3600	0.0	0.0	0.0	0.0	0.0
MILLARD	8400	0.0	0.0	0.0	0.0	0.0
MORGAN	4700	0.0	0.0	0.0	0.0	0.0
PIUTE	1300	0.0	0.0	0.0	0.0	0.0
RICH	1700	0.0	0.0	0.0	0.0	0.0
SALT LAKE	541000	35.5	6.6	32.0	5.9	.9
SAN JUAN	12100	0.0	0.0	0.0	0.0	0.0
SANPETE	12900	2.0	15.5	0.0	0.0	0.0

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
SEIVER	13000	1.0	7.7	0.0	0.0	0.0
SUMMIT	7100	0.0	0.0	0.0	0.0	0.0
TOOELE	23300	.5	2.1	0.0	0.0	0.0
UINTAH	18100	1.0	5.5	0.0	0.0	0.0
UTAH	176400	11.0	6.2	7.0	4.0	.6
WASATCH	7300	.5	6.8	0.0	0.0	0.0
WASHINGTON	19500	3.0	15.4	0.0	0.0	0.0
WAYNE	1800	0.0	0.0	0.0	0.0	0.0
WEBER	135600	11.0	8.1	8.0	5.9	.7
TOTALS	1268000	92.0	7.3	54.0	4.3	.6
MEAN RATIOS			5.2		1.2	.1
VARIANCE OF RATIOS			31.6		5.3	.1

SOURCES
ODS - 1978 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

WASHINGTON

TABLE 12

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MANPOWER BY COUNTY(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
ADAMS	14100	1.5	10.6	0.0	0.0	0.0
ASOTIN	15200	1.0	6.6	2.0	13.2	2.0
BENTON	88400	11.0	12.4	4.0	4.5	.4
CHELAN	41700	7.0	16.8	5.0	12.0	.7
CLALLAM	42600	10.0	23.3	1.0	2.3	.1
CLARK	163100	13.0	8.0	6.0	3.7	.5
COLUMBIA	4700	1.0	21.3	0.0	0.0	0.0
COWLITZ	72400	9.0	12.4	3.0	4.1	.3
DOUGLAS	20900	1.0	4.8	0.0	0.0	0.0
FERRY	5200	0.0	0.0	0.0	0.0	0.0
FRANKLIN	29100	4.0	13.7	0.0	0.0	0.0
GARFIELD	2800	0.0	0.0	0.0	0.0	0.0
GRANT	48200	6.0	12.4	2.0	4.1	.3
GRAYS HARBOR	62500	8.5	13.6	1.0	1.6	.1
ISLAND	37900	2.5	6.6	0.0	0.0	0.0
JEFFERSON	13200	2.0	15.2	1.0	7.6	.5
KING	1154000	92.5	8.0	69.5	6.0	.8
KITSAP	120000	13.0	10.8	6.0	5.0	.5
KITTITAS	24300	3.0	12.3	.3	1.2	.1
KLICKITAT	13800	3.0	21.7	0.0	0.0	0.0

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
LEWIS	50900	5.0	9.8	1.0	2.0	.2
LINCOLN	9700	1.0	10.3	0.0	0.0	0.0
MASON	25000	2.0	8.0	0.0	0.0	0.0
OKANOGAN	28600	3.0	10.5	0.0	0.0	0.0
PACIFIC	16200	1.0	6.2	0.0	0.0	0.0
PEND OREILLE	8100	1.0	12.3	0.0	0.0	0.0
PIERCE	423400	33.0	7.8	20.0	4.7	.6
SAN JUAN	6200	0.0	0.0	0.0	0.0	0.0
SKAGIT	56700	6.0	10.6	2.0	3.5	.3
SKAMANIA	6100	.5	8.2	0.0	0.0	0.0
SNOHOMISH	273200	21.0	7.7	5.5	2.0	.3
SPOKANE	310200	30.0	9.7	20.0	6.4	.7
STEVENS	23800	3.0	12.5	0.0	0.0	0.0
THURSTON	106600	6.5	6.1	3.0	2.8	.5
WAHKIAKUM	3800	0.0	0.0	0.0	0.0	0.0
WALLA WALLA	43400	7.0	16.1	4.0	9.2	.6
WHATCOM	92400	8.0	8.7	5.0	5.4	.6
WHITMAN	42200	3.0	7.1	0.0	0.0	0.0
YAKIMA	156600	16.5	10.5	6.6	4.2	.4
TOTALS	3657200	336.5	9.2	167.9	4.6	.5
MEAN RATIOS			10.1		2.7	.3
VARIANCE OF RATIOS			29.9		11.9	.1

SOURCES
ODS - 1978 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

WYOMING

TABLE 13

GEOGRAPHICAL DISTRIBUTION OF VISION CARE MANPOWER BY COUNTY(1977-78)

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
ALBANY	28600	3.0	10.5	3.0	10.5	1.0
BIG HORN	11800	0.0	0.0	0.0	0.0	0.0
CAMPBELL	16800	3.0	17.9	0.0	0.0	0.0
CARBON	18100	3.0	16.6	0.0	0.0	0.0
CONVERSE	10700	1.0	9.3	0.0	0.0	0.0
CROOK	5300	0.0	0.0	0.0	0.0	0.0
FREMONT	33700	4.0	11.9	2.0	5.9	.5
GOSHEN	12100	1.0	8.3	1.0	8.3	1.0
HOT SPRINGS	4900	1.0	20.4	0.0	0.0	0.0
JOHNSON	6100	1.0	16.4	0.0	0.0	0.0
LARAMIE	64500	5.0	7.8	5.0	7.8	1.0
LINCOLN	10900	0.0	0.0	0.0	0.0	0.0
NATRONA	59500	7.0	11.8	4.0	6.7	.6
NIOBRARA	3000	0.0	0.0	0.0	0.0	0.0
PARK	19400	4.0	20.6	0.0	0.0	0.0
PLATTE	8300	1.0	12.0	0.0	0.0	0.0
SHERIDAN	21600	3.0	13.9	0.0	0.0	0.0
SUBLETTE	4500	0.0	0.0	0.0	0.0	0.0
SWEETWATER	34200	5.0	14.6	0.0	0.0	0.0
TETON	6800	1.0	14.7	0.0	0.0	0.0

COUNTY	POPULATION	ODS	ODS/100000	MDS	MDS/100000	MDS/ODS
UINTA	10100	2.0	19.8	0.0	0.0	0.0
WASHAKIE	8800	4.0	45.5	0.0	0.0	0.0
WESTON	6900	1.0	14.5	0.0	0.0	0.0
TOTALS	406600	50.0	12.3	15.0	3.7	.3
MEAN RATIOS			12.4		1.7	.2
VARIANCE OF RATIOS			99.1		11.5	.1

SOURCES
ODS - 1978 BLUE BOOK OF OPTOMETRISTS
CERTIFIED OPTHALMOLOGISTS - 1977-78 DIRECTORY OF MEDICAL SPECIALISTS
COUNTY POPULATION - U.S. CENSUS BUREAU

NOTE - COUNT OF MDS INCLUDES ONLY BOARD CERTIFIED OPHTHALMOLOGISTS. NUMBER OF MDS PROVIDING EYE CARE COULD BE HIGHER.

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REVIEW OF REGIONAL HEALTH PROFESSIONAL PROGRAMS

June 28, 1979

Contract No. HRA-232-78-0130

Contractor

Western Interstate Commission
for Higher Education
1540 30th St., P.O. Drawer P
Boulder, Colorado 80302

Contractor's Project Coordinator

Susan D. Klein, Ph.D.

Sponsor

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Health Resources Administration
Division of Allied Health Professions
Room 9-22, Center Building
3700 East-West Highway
Hyattsville, Maryland 20782

This report is made pursuant to Contract #232-78-0130. The amount charged to the Department of Health, Education, and Welfare for the work resulting in this report (inclusive of the amounts so charged for any prior reports submitted under this contract) is $84,209. The names of the persons, employed or retained by the contractor, with managerial or professional responsibility for such work, or for the content of the report, are as follows: Susan D. Klein and William R. McConnell.

Other work has been accomplished to date on this contract. Thus this amount does not reflect only the cost of this report.

TABLE OF CONTENTS

PREFACE iii

LIST OF ABBREVIATIONS iv

EXECUTIVE SUMMARY v

INTRODUCTION 1

REVIEW OF REGIONAL HEALTH PROFESSIONS PROGRAMS 2

I. PROGRAMS AND PLANS FOR REVIEW 2

II. FRAMEWORK FOR ANALYSIS 3

III. REVIEW OF ACTIVE REGIONAL HEALTH PROFESSIONAL EDUCATIONAL PROGRAMS IN THE WESTERN STATES 6

Western Interstate Commission for Higher Education . . . 6

Washington, Alaska, Montana, Idaho (WAMI) Medical Education Program, University of Washington 9

Regional Dental Education Program (RDEP) University of Washington 13

Washington, Oregon, Idaho (WOI) Regional Veterinary Medical Education Program, Washington State University 15

Regional Veterinary Medicine Program, Colorado State University (CSU) 18

Tufts University School of Veterinary Medicine (Tufts) . 20

IV. REVIEW OF EXISTING REGIONAL OPTOMETRIC EDUCATIONAL PLANS . 22

New England Board of Higher Education (NEBHE) 22

Southern Regional Education Board (SREB) Study and Plan for Tri-State Optometry School for Georgia, North Carolina, and South Carolina 23

Other Studies of Optometric Education Needs 25

V. APPLICABILITY OF FEATURES OF PROGRAMS REVIEWED TO THE REGIONALIZATION OF OPTOMETRIC EDUCATION IN THE WEST . . 29

Access and the Admissions Process. 29

Program Elements 30

Sharing of Costs 31

Participation by States in the Policy Making of the Schools 31

VI. GENERAL COMMENTS ON SUCCESSFUL REGIONALIZATION PLANS . . . 31

FOOTNOTES 33

PREFACE

The provision of adequate health personnel has been a priority of officials in the West for more than twenty-five years. The Western Interstate Commission for Higher Education (WICHE) was founded in part because compacting states saw the need to assure qualified students the opportunity to acquire high-quality professional training in health fields. At the same time, these officials recognized the enormous costs involved in the unnecessary duplication of programs and facilities.

Their response was to join in cooperative ventures to provide the needed access and to expand higher education opportunities for their residents. Their answer was to regionalize many of the resources available and to use WICHE as the mechanism by which to facilitate these arrangements.

In this report on regionalization in health professional education, WICHE thus continues its long standing contribution to the health field. The report comprises part of WICHE's work on devising a regional plan to meet the future needs of optometric manpower in the thirteen western states it serves. Such a plan is to be completed by early 1980.

WICHE solicits comments on this report and its overall effort to develop a regional plan of education in optometry.

Boulder, Colorado
June 1979

Phillip Sirotkin
Executive Director
Western Interstate Commission for Higher Education

527

LIST OF ABBREVIATIONS

PSEP	Professional Student Exchange Program
CSU	Colorado State University
MCO	Massachusetts College of Optometry
NEBHE	New England Board of Higher Education
OSU	Oregon State University
PU	Pacific Universtiy
RFP	Request for Proposal
RDEP	Regional Dental Education Program
SCCO	Southern California College of Optometry
SREB	Southern Regional Education Board
WAMI	Washington, Alaska, Montana, and Idaho
WICHE	Western Interstate Commission for Higher Education
WOI	Washington, Oregon, and Idaho
WSU	Washington State University

EXECUTIVE SUMMARY

The purpose of this report is to review active regional health professional educational programs in the western states and existing regional optometric educational plans in order to determine their applicability to the regionalization of optometric education in the western United States. This review is one of the steps required in achieving the overall purpose of the contract, which is to develop an implementation plan for the regionalization of optometric education in the western states. The plan will include:

1. A suitable curriculum model,
2. A projection of student enrollment levels by state for each participating college of optometry,
3. Admission criteria and policies,
4. A financial plan whereby the full costs will be equitably shared by the participating states,
5. A time-phased activity schedule for implementation, and
6. Descriptions of the administrative and/or educational roles of the participating state governments, higher education institutions, and professional associations.

In order to carry out the review, it was necessary to identify the existing regional optometric educational plans and active regional programs in the western states. Pertinent information was assembled for each program identified. A framework of key elements was developed and used in reviewing and analyzing each program or plan. The results have been set forth in a description of each program or plan, and a chart summarizes each according to that framework. Finally, the various features identified were evaluated for their applicability to optometric education in the western states, and the advantages and disadvantages of regionalization discussed.

INTRODUCTION

This review of regionalization plans is designed to facilitate the development of a preliminary plan to regionalize optometric education in the West. This plan will encourage the three existing educational institutions to broaden their programs to better meet the needs of the region; in addition, states will be encouraged to equitably share the cost of the regional program. It is believed that a regional approach can improve the quality of optometry education, help to correct the maldistribution of optometrists in the region, and thereby improve the vision status of the population.

In 1953, western governors and legislators created WICHE, the Western Interstate Commission for Higher Education. WICHE assists the thirteen[1] member states by: 1) increasing the availability of higher education to students; 2) assisting states in acquiring needed manpower; and 3) helping states increase the effectiveness and efficiency of their higher education programs.

From the beginning of the Compact, health professional education was a major concern. WICHE's Student Exchange Program enables a student in one of the western states to enroll in a program in another western state when the program is unavailable in the home state. This mechanism assures educational access and prevents costly duplication of programs. Of the fifteen fields of study cooperating in the Professional Student Exchange Program (PSEP), eleven are health professional fields. Dentistry, veterinary medicine and optometry account for the largest numbers of students currently involved in PSEP.

In response to regional concern, the Student Exchange Program commissioned a report in 1976 to look at optometric services in the western states.[2] A contract from the Bureau of Health Manpower (Division of Allied Health Professions) to develop a regional approach to optometry education followed (1978) logically from the general role of WICHE and the organization's specific involvement with optometric education. This report represents one of the pieces of work to be accomplished on that contract before a regional plan is developed for review by each of the states; a second report analyzes data on the supply of optometric manpower and the need for vision care in the West.

REVIEW OF REGIONAL HEALTH PROFESSIONS PROGRAMS

I. PROGRAMS AND PLANS FOR REVIEW

The contract specifically identifies the following regional health professional educational programs in the western states to be included in the review:

-Regional Dental Education Program (RDEP), University of Washington

-Washington, Alaska, Montana, Idaho (WAMI) Medical Education Program, University of Washington

-Washington, Oregon, Idaho (WOI) Regional Veterinary Medical Education Program, Washington State University

-Western Interstate Commission for Higher Education (WICHE)

The Regional Veterinary Medicine Program of Colorado State University was added to this list. Additional programs to be reviewed were identified through a literature search and through discussions or correspondence with persons knowledgeable about regionalization.

The contract specifically names the plan completed by the New England Board of Higher Education as an existing regional optometric educational arrangement to be included in the review. The study done by the Southern Regional Education Board, and the plan developed subsequently for a Tri-State Regional School of Optometry involving the states of Georgia, North Carolina, and South Carolina were also added.

While not specifically required by the contract, the developing New England School of Veterinary Medicine at Tufts University, a private institution, was also identified for review. Since two of the three existing schools of optometry in the West are private institutions it was thought that this privately based program might yield features that could be applicable to this project.

Other studies of the need for regional plans in optometric education were identified and will be briefly mentioned, although these studies do not describe active programs or existing plans.

II. FRAMEWORK FOR ANALYSIS

The term "regional health professional educational program" can be applied to a wide range of organizational arrangements. A brief review of some of these arrangements involving more than one state is useful in identifying the key elements to be examined in this review of regional programs.

A. The simplest regional arrangement is a professional school that indicates it will serve a particular region of the country. For instance, the new College of Osteopathic Medicine of the Pacific in Pomona, California, has declared its intent to serve the western states. It has implemented this intention by focusing its recruitment of students, establishment of hospital affiliations, appointment of board members, and fund-raising activities in the western states.

B. Another "regional" arrangement is the bilateral contract whereby a professional school contracts with a state (typically one without such a school) to accept a specified number of residents of that state in each class. The state agrees to make a specified annual per-student payment to the school. The amount of the per-student payment may be based on a calculated cost of education or it may be a negotiated price not directly related to cost.

C. The Southern Regional Education Board (SREB) Contract Program is another kind of regional arrangement. SREB contracts with each professional school for a set number of student places and with each "sending" state to place its residents in one or more of the schools. A common per-student annual payment, not directly related to the cost of education, is established by SREB for a given professional field. In practice, a given state has a quota of places at a given school or has specified quotas at each of two or more schools.

D. The Student Exchange Program of the Western Interstate Commission for Higher Education (WICHE), which will be analyzed in this report, differs from the SREB contract program in that there are no quotas. Students are certified by the sending state as eligible for the program and certifications are reported to the schools. Students apply to whatever participating schools they choose. Schools give admission preference to certified students over other applicants (public schools give preference over other nonresidents); but a school is free to offer admission to whichever and as many certified applicants as it chooses. The support fees are set by the WICHE Commission on the basis of regional average per-student costs for that field.

In these regional arrangements, the service provided by the receiving school to the sending state is limited to the education of the student in its regular professional degree program. In contrast, some of the regional programs reviewed in this report include elements which represent additional benefits provided to the states by the regional program. The analysis will identify these elements.

The contract for this project specifies items to be addressed in the development of a regional plan for optometry. In many cases these required items suggested elements for which existing plans should be reviewed. For example a regional program can provide:

- Specific educational opportunities, continuing education programs and other services,
- Arrangements for providing decentralized clinical training,
- Arrangements for providing decentralized basic science instruction,
- Retention programs for disadvantaged students,
- Equitable distribution of first-year student spaces by state and participating institution,
- An admission process reflective of the special needs of underserved groups, and fair consideration of applicants from disadvantaged backgrounds,
- An equitable sharing of the full costs of the educational programs by the participating states, including an acceptable costing methodology.

Based on the foregoing discussion and on preliminary reviews of regional programs and plans, the following framework will be used for the review:

I. ACCESS AND ADMISSIONS PROCESS

   A. Need to expand professional education capacity

   B. Equitable access to professional education for residents of participating states

   C. Equitable distribution of regional students among participating schools

   D. Student choice of school

E. Participation in admission decisions by participating states

F. Affirmative action in admissions.

II. PROGRAM ELEMENTS

A. Professional degree program

1. Basic science instruction

2. Clinical training

3. Retention programs for disadvantaged students

4. Other

B. Graduate professional education

C. Continuing education

D. Health care delivery

E. Other services

1. To the practicing profession

2. To the public

III. INFLUENCE OF PROGRAM ON MANPOWER SUPPLY OF PARTICIPATING STATES

IV. SHARING OF COSTS

A. Mechanism for payments by participating states

B. Costing or other basis for payments

V. PARTICIPATION BY STATES IN POLICY-MAKING OF SCHOOL(S)

III. REVIEW OF ACTIVE REGIONAL HEALTH PROFESSIONAL EDUCATIONAL PROGRAMS IN THE WESTERN STATES

Western Interstate Commission for Higher Education (WICHE)--Includes Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

The WICHE Professional Student Exchange Program was established in 1953, in the fields of medicine, dentistry, and veterinary medicine. Dental hygiene was added in 1963, and since 1969 eleven more fields have been added so that in 1979 the following fifteen fields are included: medicine, dentistry, veterinary medicine, dental hygiene, physical therapy, occupational therapy, optometry, podiatry, pharmacy, graduate nursing education, public health, forestry, graduate library studies, law and architecture. In 1978-79, there were 1,331 exchange students involved; including 309 in dentistry, 283 in veterinary medicine, and 249 in optometry.

When a field of study is established as an exchange field, every accredited program located within the region, public or private, is invited to participate as a "receiving" program. With rare exceptions all such programs do sign up. Each state decides whether it will send students in the field.

Students apply to a state certifying officer for certification as eligible for the program, and then apply to the school or schools of their choice. Receiving programs are sent lists of the certified students and they give admission preference to these applicants over other non-resident applicants. However, the school decides which applicants and how many, from the total pool of certified applicants, will be offered admission. There are no quotas.

The exchange student is charged resident tuition in a public school or not more than one-third of regular tuition in a private school. The school receives a cost-of-education-fee paid by the student's home state and transmitted through WICHE. A common fee for each field is established by the WICHE Commission based on a cost-of-education-survey. The fee is adjusted annually.

The program provides flexibility for all parties. The certified student may apply to whatever receiving schools he chooses and if he receives admission offers from two or more schools, the student chooses the one he will accept. A state may initiate the sending of students or discontinue the sending of students in a field with any year's entering class and may adjust the numbers to be supported from year to year. A school can adjust the numbers to whom it will offer admission from year to year and can enter or withdraw as a receiving program with any year's entering class. The impact of such actions by states or schools is upon the total pool of certified students, not upon an individual school or state. The individual state can set its own criteria for certification of students and can attach conditions such as a service or payback requirement. A school sets its own admission criteria.

With this flexibility comes uncertainty. A state is not assured of a fixed number of student places, and a school cannot count on enrolling a particular number of exchange students in an entering class. A student, even though he receives an admission offer, might not be supported as an exchange student if the total of admissions for students from his state exceeds the numbers for which his state has funds. It would be possible to change to a system of fixed quotas, but much of the flexibility of this mechanism would be lost.

This plan is summarized below using the framework described on pages 4 and 5. A chart which summarizes this program and facilitates comparison with the other programs reviewed is found on pages 26-28.

- The WICHE student exchange program does not directly address the question of expanding educational capacity. On occasion, when a shortage of places to meet the collective demand for places on the part of sending states has developed, WICHE has convened interested parties from throughout the region to address the problem and seek solutions. In at least one case this led ultimately to an expansion of capacity.
- The program provides equitable access to professional education for residents of participating states as determined by individual states' actions in deciding the numbers of places to support.
- Equitable distribution of regional students among participating schools is determined by the schools' actions in offering admission to certified students.
- Students may apply to the participating schools of their choice and, if they receive multiple offers, may choose which one to accept.
- The program does not provide for participation in admission decisions by the sending states.
- The program does not directly address affirmative action in admissions, but affirmative action policies of individual schools do enter into their consideration of certified applicants.
- None of the items identified in the framework under the heading "program elements" is addressed by the WICHE program. Instead, access to the regular professional degree programs of the participating schools whatever their character, and choice among them, constitute the service provided by the regional program to participating sending states and their residents.
- The program itself has no direct influence on manpower supply of the participating states except to the extent that residents of a state are likely to return to that state to practice, and the

program increases the number of residents securing professional education. It is possible for a participating state to influence its manpower supply by attaching a service requirement as a condition of participation in the program by its residents.

- The mechanism for payments by participating states is an annual per-student support fee paid by the sending state, through WICHE, to the receiving school. A support fee for a particular professional field is uniform, without regard to the state from which the student comes or the school he attends.
- The support fee amount is based on a biannual cost-of-education survey of all receiving schools. A regional average cost-per-student, weighted according to the number of students attending each school, is calculated and then adjusted for projected changes due to inflation or other changes in costing elements anticipated during the interim between the year for which costs were calculated and the year in which the support fee applies.
- The program does not provide for participation by the sending states in the policy-making of the schools.

Since the WICHE program is the existing regional program for optometric education in the western states, it is appropriate to review some specifics of the student exchange in optometry. All three schools of optometry located within the region participate. These are Pacific University (PU), Southern California College of Optometry (SCCO), and University of California, Berkeley (UCB). Eleven of the thirteen WICHE states send optometry students. The exceptions are California which has its own public optometry school, and Wyoming which sends students under bilateral contracts between that state and PU and SCCO rather than through the WICHE program.

Since optometry was established as an exchange field in 1970 the number of exchange students has grown steadily to a figure of 249 in 1978-79. A little more than a million dollars of support fees was paid in 1978-79. In that year the support fee was $4,200 and it will increase to $4,500 in 1979-80 and to $4,700 in 1980-81.

The 249 exchange students in 1978-79 were distributed as follows: 123 at PU, 120 at SCCO, and 6 at UCB. These constituted the following percentages of total enrollments: 37% at PU, 31% at SCCO, 2% at UCB, and 25% for the three schools combined.

For the entering class of 1977-78, the sending states certified a total of 133 students. Of these 62 were accepted by the schools. Two of the 62 withdrew, and 3 could not be supported as exchange students because of inadequate funds in their states. The remaining 57 actually enrolled as exchange students. Two states were prepared to support more students than the number admitted.

Washington, Alaska, Montana, Idaho (WAMI) Medical Education Program, University of Washington

The WAMI program has been developed over a period of about ten years. The initial development phase was funded by the Commonwealth Fund; this support was followed by a very large investment of federal monies. Its several distinctive program elements have been in operation for a number of years and the participating states have now assumed full responsibility for its funding.

A. The intent of the program was to increase the opportunities for medical education in the four Northwest states, without constructing additional facilities. At the same time, it aimed to provide opportunities for students to receive a part of their training and participate in health care delivery in sites away from the University, thus imprinting on students the social and cultural aspects of professional life in these settings and increasing the likelihood that they would return to such locations to practice.

B. Students receive their first year of pre-clinical instruction at universities in their home states. Students in the University Phase include: 20 at Montana State University, 20 at the University of Idaho, and 10 at the University of Alaska, Fairbanks. In addition, 20 students are enrolled for the first year at Washington State University, at the opposite end of the state from the School of Medicine in Seattle. In addition to these 70 students in the WAMI program, 105 students are enrolled in the entering class at Seattle. After the first year, the WAMI students join the others at Seattle for the 2nd, 3rd, and 4th years of training.

C. A network of 17 Community Clinical Units spread across the four states provides clinical training in family medicine, internal medicine, obstetrics-gynecology, pediatrics, and psychiatry. In addition, residency training is provided in these units. Practicing physicians in these communities are involved in providing clinical instruction.

D. Using the network of the four outlying universities and the community clinical units, the resources of the School of Medicine are made available to the health professionals and health care systems of the region in a variety of ways. Faculty members from Seattle visit outlying sites to monitor students and residents; in this process, they often see patients, make hospital rounds, and give lectures. Thus, continuing education opportunities resulting from the WAMI program are formal and informal.

E. In addition, MEDCON, a toll-free medical consultation service at the School of Medicine in Seattle is provided to physicians throughout the four-state area. WAMI also makes extensive use of telecommunications technology.

The WAMI program represents the most fully developed existing regional educational program. The University of Washington acts as an educational resource for its four-state region, and services delivered to sending states involve more than simply providing educational access. This program has been carefully designed so that the participating states feel part of the program; this is reflected in the program's name and in the presence of decentralized educational components in these states.

The staff of the WICHE optometry project have reviewed many of the materials written about WAMI; the staff have also visited different phases of the program and conducted interviews with students, faculty and administrators. This innovative program has generated a great deal of enthusiasm. It is not surprising that this program has also generated problems and criticism.

The operation of a regional education program is more expensive than a traditional program in terms of both dollars and time. It should be noted that although it is more expensive to have students spend their first year in their home state, the states appear satisfied with the arrangement. Because of the importance of local support and involvement in the maintenance of the program, a large amount of resources must be invested in communications activities. Travel is necessary in order to provide opportunities for the direct contact of different people who must cooperate in the operation of the program.

Within the sponsoring institution at Seattle internal opposition from the faculty caused the greatest obstacle to regionalization. The faculty were opposed to the increased demands on their time. With a trend toward decreasing enrollments in the health professions, this concern will become easier to overcome. The faculty also questioned the quality of education that students would receive in the decentralized program. However, evaluation studies have shown that students who have gone through the WAMI University Phase have done as well as students who began medical school in Seattle. In addition, the students feel positively about the decentralized program.

Courses taught at various sites are coordinated by a faculty member based in Seattle. Whereas initially the outlying units exercised a fair amount of autonomy; it appears that centralization is increasing.

Some outlying programs feel they have lost the flexibility necessary to design instructional methods appropriate to their setting. At the outlying sites, the WAMI program is a very small unit within the overall university setting. While benefits by way of strengthening andbroadening the science departments of the universities are recognized, the teaching loads and salary levels of WAMI staff may be a source of friction. Some would say that the states need more control over the decisions affecting the operation of the program at the outlying sites. It has been suggested that there should be more coordination between the university and community clinical sites within a state. In addition, although states do have a part in the admissions process, control of this process rests in Seattle. At times states do not feel they have a strong enough role in admissions. Thus, the greatest problem from the perspective of sending states may be their lack of control in the management of the WAMI program.

The following reviews the WAMI program according to the framework delineated on pages 4 and 5. The reader may wish to refer to the chart on pages 26-28 in order to compare this program with others reviewed in this report.

- One of the purposes of the WAMI program has been to expand one school's capacity for professional education without major construction of facilities. Overall class size has been increased from a little under 100 in 1971 to 175 in 1978.
- Equitable access to professional education for residents of participating states is provided by the entering-class numbers agreed upon by the states and the University of Washington School of Medicine.
- Equitable distribution of regional students among participating schools is accomplished to some extent in the University Phase by allowing students to remain in their home state.
- Students do not have a choice among schools in the case of the WAMI program. There is the possibility in exceptional cases for a student to attend the university phase at a site other than his home state, and there is opportunity for choice in clinical locations.
- The program provides for state participation in admission decisions by providing that the Admissions Committee of the University of Washington which reviews candidates from a given state will include at least one member from that state who is mutually acceptable to the University of Washington and to the governing board of that state.
- Nothing definitive was learned on the matter of affirmative action in admissions. One observer feels that inadequate consideration is given to minority applicants.
- The teaching of the first year of the professional curriculum at four outlying university sites is a central feature of the program.
- The provision of clinical training in seventeen community clinical units is a central feature of the program.
- No reference to retention programs for disadvantaged students, as a part of the WAMI program, was found.
- The program has an emphasis on family practice and other primary care specialities.

- The program provides residency settings in the community clinical units and residents are key participants in the clinical education of undergraduate medical students at these sites.
- The network of four outlying university sites and 17 community sites is used for the delivery of continuing education for health professionals in those locations.
- Health care is delivered to residents of the areas in which the community clinical units are located.
- Professional back-up is provided to health professionals in the participating states in a variety of ways other than continuing education.
- Except for health care itself, no particular services to the public in the participating states were identified.
- One of the objectives of the program is to increase the number and improve the geographic distribution of physician manpower in the participating states. Some of the key features of the program are aimed at accomplishing this. In a statement from the program in the fall of 1978, it was said that the data were not yet available in the quantity necessary to draw definitive conclusions as to the accomplishment of the objective.
- The Kasonic Reports provide the basis for the costing of the WAMI program. The mechanism for payments by the participating states differs among the states. Alaska and Montana pay the costs of the university phase programs in their own states directly. These states pay the University of Washington for the cost of educating their students in Seattle and for the costs of the community clinical units. Idaho pays the University of Washington for all costs including the university phase at the University of Idaho. The University of Washington contracts with the University of Idaho to conduct the university phase and with all the community clinical units. These procedures are specified in contracts signed in 1975 between the University of Washington and the states.
- Payments are based on a cost analysis completed in December, 1974. Included are net education expenditures of the University of Washington and (in the case of Idaho) of the University of Idaho, the University of Washington faculty support to the university phase, the WAMI program administration, and the net costs of establishing and operating the community clinical units. The amounts are negotiated annually.

- The program does not provide for any formal participation by official representation from the participating states in the policy making of the University of Washington. Such representation has been involved in negotiation of the original contracts, in annual negotiations on financial matters, and in such matters as the requirement that the director of the university phase in a state and the state's representative on the admission committee be mutually acceptable to the University of Washington and the cognizant body in the state concerned. But, in terms of the ongoing policy-making of the University of Washington School of Medicine, no formal representative is provided.

Regional Dental Education Program (RDEP) University of Washington

The RDEP is not an operational program. From July 1, 1976 to June 30, 1978 the University of Washington School of Dentistry conducted a feasibility study of a regional dental education program under a Health Professions Special Project Grant and concluded that a RDEP was feasible. On June 7, 1979 the Health Resources Administration issued Request for Proposal No. HRA 232-DD-0020(9) for Prototype Regional Dental Education Program. This review will be based on the statements of purpose and scope of work of this RFP.

According to the statement of purpose the project will implement a prototype system that provides a portion of the education for dental students outside the dental educational institution and within the student's own native geographic area. It will demonstrate the steps required to implement such a system and design and analyze various aspects of the undertaking, as a model for use in other locations.

The professional curriculum to be implemented is similar in its broad structure to that of the WAMI program. The first year is to be taught to residents of participating states at satellite university sites located in those states. These students will attend the central university (contractor) for their second and third years. They will receive clinical instruction for a portion of the fourth year in decentralized community clinical units and preceptorships.

The RFP calls for the enrollment of no less than five first year students in the fall of 1979, no less than five in the fall of 1980, and no less than 10 in each of the following three years. It provides that the contractor will identify, and implement the necessary cooperative agreements with, no less than five satellite university sites in the first year of the program (one of them by September, 1979), and no less than two more in the second year. It provides that the contractor will identify, and implement cooperative agreements with, no less than two community clinical units in the second year of the program and eight more in the third year.

The RFP states that the activities shall include the provision of regionalized dental education to students from the northwestern region of the United States. "Northwestern State" is defined to include several states which have dental schools: California, Colorado, Oregon, and Washington. It includes states which currently send dental students under the WICHE Professional Student Exchange Program (Alaska, Idaho, Montana, Nevada, Utah, and Wyoming). Idaho, Montana, and Wyoming also send students to existing schools under bilateral contracts with dental schools outside the WICHE region.

Description of the program according to the framework for review is as follows:

- The matter of expansion of professional education capacity is not addressed by the RFP.
- The matter of equitable access to professional education for residents of participating states would presumably be determined when a state agreed to participate in the program.
- The matter of equitable distribution of regional students among participating schools is not involved, assuming a single dental school is the contractor.
- In the regional program, students could attend only the dental school which is the contractor.
- Participation in admission decisions is not determined in the RFP.
- Nothing is said about affirmative action in admissions in the regional program itself.
- Decentralized instruction of regional students in satellite universities for the first year of the professional curriculum is a feature of the program.
- Decentralized clinical training in community clinical units is a central feature of the program.
- Nothing is said about retention programs for disadvantaged students.
- Dental education will be provided to those qualified students interested in becoming practicing dentists.
- Nothing is said about graduate professional education.
- Nothing is said about continuing education.
- The community clinical units are defined as facilities used primarily for the purpose of providing dental services to the public and secondarily as teaching facilities.

- Nothing is said about services to the practicing profession.
- Nothing is said about services to the public other than the provisions of dental services by the community clinical units.
- Reference is made to relieving rural dental manpower shortages as a purpose of the program; the mechanism to accomplish this is not described. No manpower study was done to provide a rational need for the development of this program.
- The contractor will be required, in the fourth year, to establish agreements whereby funding sources from each participating state will provide support to defray the cost of its students' participation in the RDEP. Nothing is said about the mechanism for payments.
- The contractor, in the fifth year, will design, conduct and analyze the cost elements of the RDEP system including per-student costs of the instructional program. As indicated above, agreements will be established for the states to make payments based on such costs.
- No ongoing formal participation by the states in the policy-making of the dental school is indicated in the RFP.

Washington, Oregon, Idaho (WOI) Regional Veterinary Medical Education Program, Washington State University

The WOI program has been developed over the last seven or eight years. Interim agreements have governed the developing stages of the program from 1974 to 1979 in the case of Idaho and from 1976 to 1979 in the case of Oregon. Effective July 1, 1979 the program will operate under a tripartite agreement between Washington State University, The Oregon State Department of Higher Education acting for Oregon State University, and the University of Idaho. The provisions of this agreement will provide the basis for this review.

Beginning with the class entering in the fall of 1979, 36 students (approximately 28 from Oregon and about 8 WICHE exchange students) will be given their first year of the professional curriculum at Oregon State University (OSU) in Corvallis. Seventy students (approximately 15 from Idaho, 45-50 from Washington, and 5-10 WICHE exchange students) will be given their first year at Washington State University (WSU) at Pullman. The students who start at OSU will join the WSU group for the second year and most of the third year. They will return to OSU for the balance of the third year and the fourth year. The fourth year of the curriculum is presented in four-week blocks of clinical training. Some specialty training blocks will be offered only at a single location, and students needing them will go to that location.

The total entering class will number 106 compared to a class size of about 80 at WSU in recent years. Since 1974 Idaho has had reserved places (recently 15) at WSU. Since 1977, Oregon has had 12 places reserved at WSU. WSU has accepted WICHE exchange students for over twenty years.

Oregon will provide its own facilities and financing for its part of the program and will pay WSU for the education provided to the Oregon sponsored students by WSU. Idaho pays its share of costs by employing faculty at the University of Idaho who teach in the program at Pullman, some ten miles distant. Idaho also operates a food animal clinic facility, housed in a newly constructed plant at Caldwell that is used for clinical instruction. Idaho has also constructed office and research facilities for the faculty at the University of Idaho. WICHE support fees at the regular rates are paid to OSU or WSU, wherever the exchange student is receiving his instruction.

The purposes of the WOI program, as stated in the tripartite agreement, are as follows:

-To increase the supply of better-trained veterinarians.

-To provide continued opportunities for education in veterinary medicine for residents of Washington, Oregon, Idaho, and residents of the other WICHE states.

-To provide greater clinical exposure for students to the various aspects of veterinary medicine because of availability of diverse and increased clinical resources.

-To broaden the base of support for a program of veterinary medical education, making possible greater regional cooperation in research and service and facilitating regional cooperation.

-To increase efficiency through the joint use of facilities and faculty in each state within specialty fields being developed at respective campuses and other locations.

-To promote and improve cooperation in research and in continuing education programs.

The following represents the review of this program according to the framework described on pages 4 and 5.

- The program expands professional education capacity from 80 to 106.
- Equitable access for residents of the participating states is provided, as determined by the three states in deciding the numbers of reserved places.
- Equitable distribution of regional students is provided by the structure of the program.

- Students from each of the three states have a single choice of school under the program, which in the case of Oregon students includes attendance at both OSU and WSU at different points in the program. There is some choice among clinical blocks at different locations. WICHE exchange students can indicate a choice between OSU and WSU that cannot always be honored. They also have choice between WOI and the other WICHE veterinary schools at Colorado State University and the University of California, Davis.
- A Joint Committee on Admissions consists of a minimum of four members, one from OSU, one from the University of Idaho, and two from WSU. In addition, there are committees at OSU and the University of Idaho which evaluate and make recommendations on applicants from their respective states.
- No specific affirmative action plan is provided by the regional program. There is a non-discrimination clause in the tripartite agreement.
- The first year of the professional curriculum is taught at both OSU and WSU.
- Clinical training is decentralized and specialized to promote quality and efficient use of resources, including clinical material. Manpower distribution as an objective of decentralization is not stressed.
- The program does not specifically address retention programs for disadvantaged students.
- The program encourages cooperation and enhancement of graduate professional education, but does not include specific mechanisms.
- Cooperation and expansion of continuing education is an objective, but the program does not specify any particular mechanisms.
- Animal health care is delivered through the expanded and extended facilities for clinical education.
- The program does not include specific services to the practicing profession, beyond the encouragement of continuing education.
- No particular services to the public, other than animal health care, are included.
- Expansion of professional training capacity has increased manpower for the participating states. A manpower study was done in the process of developing this program.

- Payments to WSU for education of Oregon-sponsored students in the second and third years will be made by Oregon on a per-student basis. Idaho's share of costs is met by direct expenditures in Idaho for faculty and a clinical facility.
- The payments by Oregon and expenditures by Idaho are based on a net per-student cost. These costs exclude administrative, plant operations, maintenance costs, and facilities amortization.
- Under the provisions of the tripartite agreement, policy for the program is made by a Council of Deans, consisting of the veterinary deans of OSU, WSU, and the University of Idaho.

Regional Veterinary Medicine Program, Colorado State University (CSU)

In addition to Colorado, the CSU program involves the eight states not included in WOI that send students in veterinary medicine through the Professional Student Exchange Program. In the early 1970s the demand for places on the part of the sending states greatly exceeded the number of places the receiving schools were able to make available. After exploring possible solutions to the problem, a plan was developed whereby CSU would expand its capacity in order to accept more regional students; certain adjustments were made in the traditional WICHE Professional Student Exchange mechanism in order that the sending states could provide the assurances and support necessary for CSU to undertake the expansion.

Total class size at CSU was expanded from 95 to 137. Places for exchange students were increased from about 30 to 62, or 45% of the total class. Of the 62 places, a total of 47 were allotted as minimum guarantees to each of the eight sending states. A state is guaranteed this minimum number of admissions so long as it presents a sufficient number of qualified applicants. The filling of the remaining 15 places is done by CSU from the best qualified of the remaining applicants from the eight states; this process is limited by the numbers the states are prepared to support.

In authorizing the expansion, the Colorado Legislature specified that the support fee paid by the sending states for their students enrolled at CSU must include: reimbursement for the direct and indirect costs of instruction in the veterinary program; a fee to reimburse Colorado for its investment in the existing facilities used by the program; and a fee to provide the sending states' share of the cost of the new teaching-hospital required by the expanded program. This fee is different from the normal WICHE support fee that had been based on operating costs only. A unique feature of this annual support fee is that the sending states pay for both existing facilities and new construction located in Colorado.

The sending states gave Colorado assurances, which could not be binding, that they were committed for the long term to sending their students to the program and paying the support fees. Colorado sold revenue bonds to finance the sending states' share of the cost of the new hospital; a portion of the receipts from the annual support fee was pledged to pay for the interest and retirement of the bonds.

WICHE sponsored the discussions among the interested parties and solicited the assurances of commitment from the participating states. The regular WICHE exchange mechanism is used for the administration of the program. A WICHE Regional Advisory Council on Veterinary Medicine representing all thirteen states provides the forum for regular review of the program by all parties.

Using the framework for review, the program may be described as follows:

- Capacity was expanded from a class size of 95 to one of 137.
- Equitable access is provided by the minimum guarantees of places for each of the eight states.
- Distribution of regional students among schools is not considered in this program per se. However, the CSU, WOI, and University of California, Davis programs have a forum in the Regional Advisory Council for dealing with this matter.
- Students from the eight sending states participating in the CSU program can apply to any of the three veterinary programs within the region.
- The CSU program does not provide for participation by the sending states in admission decisions.
- The regional program does not itself have a specific affirmative action provision.
- None of the items identified in the framework under the heading "program elements" is addressed by the CSU regional program. Instead the regular professional degree program of CSU, including the expanded number of places, is provided to the participating states and their residents.
- The program itself has no influence on the manpower supply of the participating states except to the extent that students given access to training are likely to return to their home states to practice. Individual states can impose a service requirement upon their students participating in the program.
- Costs are shared through support fees paid through the regular WICHE exchange mechanism.

- Support fees are based on costs, including use charges for existing facilities and debt service charges on bonds sold to finance the sending states' share of the cost of a new teaching-hospital.
- The program does not provide direct participation for cooperating states in the policy-making of the veterinary school. The WICHE Regional Advisory Committee on Veterinary Medicine provides a forum for discussion of concerns.

Tufts University School of Veterinary Medicine (Tufts)

In addition to those plans identified in the West, the developing veterinary school at Tufts has been identified as an existing regional plan. It has, therefore, been included in this review.

In the early 1970s, a series of studies were made on the need for a school of veterinary medicine in New England. A regional school serving the six-state region was proposed; the land grant schools in New England competed for this school and the plan appeared to die. As a private institution, Tufts appeared to have some advantages; it could be more flexible in responding to opportunities. In February 1977, the Board of Trustees of Tufts University authorized preliminary planning for a school. In March, a $100,000 planning grant was made to Tufts by the New England Regional Commission, and a second grant of $100,000 was made in December. Federal legislation provided for a $10 million construction grant; this funding facilitated early accreditation of the program. Planning proceeded rapidly, and the first class of 35 students will begin in 1979.

Basic science instruction will take place in Boston at the Tufts New England Medical Center. Small animal clinical training will be focused at the Angell Animal Hospital, a well-known private clinic and research facility in Boston. Large animal clinical training will be focused at Grafton, forty miles west of Boston, where facilities will be constructed on a site provided to Tufts by the state of Massachusetts. This school will clearly capitalize on existing resources. Other clinical sites are expected to be developed at the land-grant universities in the six states.

The school hopes to develop contracts with each of the six states for support of students in numbers proportional to state population. In 1979-80, a contract fee of $9,000 and a tuition charge of $6,000 are calculated to meet a $15,000 per-student operating cost.

Following the framework for review:

- The school is planned for an eventual class size of 150, representing new capacity.

- Equitable access is provided by making state quotas proportional to state population, but states will decide how many students to support.

- Equitable distribution of regional students among schools is not involved.

- The regional program would not provide the student a choice of schools.

- No provision is made for participation by the states in admission decisions.

- No particular affirmative action plan is provided by the regional program.

- Basic science instruction will be coordinated with that for medical and dental students on the same campus and will have interdisciplinary features.

- Clinical training will include some decentralized sites.

- Nothing is said about retention programs for disadvantaged students.

- The school plans graduate programs, but no decentralized elements are mentioned.

- Continuing education is planned.

- Health care delivery will be involved in the clinical training, and some of it represents a new capacity for care. This feature has encouraged private contributions.

- No specific services other than continuing education are mentioned, for either professionals or the public.

- The regional program's new capacity will mean expansion of veterinary manpower in New England. The school's program will be designed to produce specialists that are predicted to be in short supply in the future; i.e., veterinarians trained in marine areas, and those trained in "one medicine" (looking at commonalities between humans and animals).

- The mechanism for payments is a per-student fee paid by each state under individual bilateral contracts.

- The basis for the fee includes a support fee plus a relatively large tuition charge, together covering per-student cost.

- Nothing was found in the way of provisions for the states to participate in governance of the school.

IV. REVIEW OF EXISTING REGIONAL OPTOMETRIC EDUCATIONAL PLANS

New England Board of Higher Education (NEBHE)--Includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

In 1975 NEBHE, under HRA contract N01-AH-44102, issued a report of Recommendations for Regional Action for Optometric, Osteopathic, and Podiatric Education in New England. For the long term, the report recommended the establishment of a regional academic health center in New England to include programs of study in such health professional fields as optometry, osteopathy, and podiatry, in addition to others that might later be included. Beyond suggesting two possible sites, nothing definitive was recommended except that NEBHE should serve as the coordinating agency for a program planning project and seek the funding necessary for such a project.

For the shorter term, the report made recommendations for immediate action designed to convert the Massachusetts College of Optometry (MCO) from an independent institution to one that is multi-state supported and regionally controlled. In addition it was recommended that MCO seek a contract with Northeastern University, and other appropriate institutions, providing for as many areas of cooperation as possible, such as reciprocal use of libraries, clinics, laboratories, student facilities, joint faculty appointments, etc.

The only aspects of these recommendations that would represent a regional program subject to review in this report are: 1) a recommendation that MCO's charter and bylaws be revised to permit appointment of some members of the board of trustees by the governors or other designated state officials, and 2) that MCO devise and seek adoption of a system of financing by which each of the six New England states shares equitably in the annual operating costs of the institutions, with an interim use of contracts for places for each state.

Since the report was issued, MCO changed its name to New England College of Optometry and developed contracts through the NEBHE Health Professions Contract Program whereby four of the states supported a total of 29 students in 1977-78. Affiliation with a university has not been accomplished. Several decentralized clinical sites have been established. Provision has been made for state-appointed trustees and four states have named a trustee.

The only items in the framework for review that are addressed by the NEBHE plan are as follows:

- Rescue of the college of optometry from its precarious financial position and improvement of its educational program are viewed as essential to assuring an adequate supply of optometric manpower in the New England states.

- The mechanism for payments by participating states, on an interim basis, is the NEBHE Health Professions Contract Program in which an annual per-student payment is made by the participating state to the receiving school, for each of the state's residents enrolled. Later, the plan proposes that each state appropriate a lump sum for payment to the school in support of its students enrolled there.
- Both the interim and longer term mechanisms would base the payment on net cost.
- A unique feature of this plan is its provision that the participating states have a direct voice in the governance of the school through appointment of some members of the board of trustees by the governors or other appropriate authorities in each of the six states.

Southern Regional Education Board (SREB) Study and Plan for Tri-State Optometry School for Georgia, North Carolina, and South Carolina

In 1974, SREB issued a consultants' report recommending that additional schools of optometry be established in the South. The report envisioned two or three new schools, each serving a region of three states. Two such groups of states held meetings to explore interest in such an undertaking and decided against further consideration of the matter, choosing to rely instead on their existing arrangements through the SREB contract program. A third group of three states decided to develop a plan for establishment of a tri-state optometry school.

The documents reflecting the plan developed are a "Policy Statement and Formulation" and "Proposed Plan of the State of South Carolina for Financing the Tri-State Regional School of Optometry." These will be the basis of the review, although they do not represent a definitive plan.

The South Carolina proposal was dated January, 1977. Since then, the proposed host institution, the Medical University of South Carolina withdrew itself, and no other host institution has appeared. Very recently it appears that North Carolina at Chapel Hill is considering developing a school.

The review according to the items in the framework follows:

- The plan would create a new school with a class size of 90.
- Numbers of places specified in the plan and based on manpower studies would provide equitable access for residents of participating states, from the standpoint of the states' manpower needs but not necessarily from the standpoint of educational opportunity.

- Equitable distribution of regional students among schools is not applicable here.
- Students would not have a choice of schools.
- The plan does not specify any participation by the cooperating states in admission decisions.
- No mention is made of affirmative action in admissions.
- The plan does not provide for decentralized basic science instruction.
- The plan projects that fourth year clinical training would be provided in decentralized area health education centers and preceptorships.
- No mention is made of retention programs for disadvantaged students.
- The plan calls for the optometry school to be a part of an academic health center and that the professional program would include interdisciplinary elements.
- Residencies in clinical optometry would be developed in community health centers.
- The plan calls for linkages with other optometry schools in the packaging and delivery of continuing education in the region.
- The plan does not specify the development of new health care delivery sites, but clinical training would contribute to increased delivery of eye care in some locales.
- No other specific services to practicing optometrists or the public are projected.
- A major purpose of the plan is the maintenance and some expansion of optometric manpower in the three states.
- Payments by the participating states would be on a per-student basis using the SREB contract mechanism.
- Per-student payments would include an operating cost element at less than full cost in recognition of extra benefits realized by the host state in having the school there. A capital element would amortize the sending states' share of initial capital cost over a 12-year period.
- The participating states would not have a direct voice in governance, but would be represented on a Tri-State Regional Advisory Board which would decide various operational matters.

In addition a representative committee from throughout the SREB region is proposed for planning and coordination of optometric education on a regional basis.

Other Studies of Optometric Education Needs

In the process of identifying the programs and plans to be reviewed in this report, a number of studies of optometric education needs were identified. They did not result in regionalization programs or plans, and are mentioned here as an indication of the amount of recent activity in studying optometric education needs. The following list is not intended to be exhaustive.

-A Report on the Feasibility of Establishing a School of Optometry in the Commonwealth of Virginia--A Special Report to the Governor and the General Assembly 1976.

The recommendations included that a school of optometry designed solely to meet the optometric manpower needs of Virginians should not be established, but that Virginia should increase the number of student places currently contracted for with existing schools and colleges of optometry. It was also recommended that Maryland, North Carolina, Virginia, West Virginia, and Washington, D.C. should initiate planning for a regional school of optometry.

-Proposal--A Regional School of Optometry, Department of Higher Education, State of Missouri, December 1, 1977.

The report reviews the alternatives for Missouri: (1) ignore the matter, (2) contract for places with schools of optometry in other states, and (3) work with neighboring states to establish a regional school of optometry. The report concludes that the third alternative is the only solution.

-Planning for Optometric Education and Manpower--A final report of the North Central Committee on Regional Optometric Education (Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin) November, 1978.

The report includes a brief review of interest and activity in each state; the growth of contracting for places is notable.

The report concluded that no region-wide, nine-state shortage of optometrists exists and that the availability of student contract spaces in current institutions is likely to continue to serve the needs of those states choosing that alternative. In effect, the report dismissed further consideration of joint state action for a regional school.

SUMMARY OF FEATURES OF REGIONAL PROGRAMS AND PLANS

	Regional Program or Plan Reviewed							
Program Feature	WICHE	WAMI	RDEP	WOI	CSU	NEBHE	Georgia, North Carolina & South Carolina	Tufts
I. ACCESS AND ADMISSIONS PROCESS:								
A. Need to Expand Professional Education Capacity	No	Yes	?	Yes	Yes	No	Yes	Yes
B. Equitable Access to Professional Education through:								
1. Individual state action	X		X			X		X
2. Some form of multistate negotiation		X		X	X		X	
C. Equitable Distribution of Regional Students to Schools through:								
1. Individual school action	X							
2. Some form of multischool negotiation				X				
3. Not applicable		X	X		X	X	X	X
D. Student Choice of Schools	Yes	No	No	No	Yes	No	No	No
E. Participation by States in Admission Decisions	No	Yes	?	Yes	No	No	No	No
F. Affirmative Action in Admissions	No	No	No	No	No	No	No	No
II. PROGRAM ELEMENTS								
A. Professional Degree Program								
1. Basic Science Instruction Decentralized	No	Yes	Yes	Yes	No	No	No	No
2. Clinical Training Decentralized	No	Yes	Yes	Yes	No	No	Yes	Yes
3. Retention Programs for Disadvantaged Students	No	No	No	No	No	No	No	No
4. Primary Care Emphasis	No	Yes	Yes	No	No	No	No	No

SUMMARY OF FEATURES OF REGIONAL PROGRAMS AND PLANS
(continued)

	Regional Program or Plan Reviewed							
Program Feature	WICHE	WAMI	RDEP	WOI	CSU	NEBHE	Georgia, North Carolina & South Carolina	Tufts
5. Location of New School in Academic Health Center							Yes	Yes
B. Graduate Professional Education Decentralized	No	Yes	No	No	No	No	Yes	No
C. Continuing Education Delivered in Participating State	No	Yes	No	No	No	No	Yes	?
D. Increased Health Care Delivered in Participating State	No	Yes	Yes	Yes	No	No	No	Yes
E. Other Services								
1. To the practicing profession	No	Yes	No	No	No	No	No	No
2. To the public	No	No	No	No	No	No	No	No
III. INFLUENCE ON MANPOWER SUPPLY IN PARTICIPATING STATE								
A. Increasing Enrollment of State Residents	X	X	?	X	X	X	X	X
B. Additional Program Features		X	X					
IV. SHARING OF COSTS								
A. Mechanism for Payment by Participating States								
1. Lump sum payment		X	?			X		
2. Per-student payment	X	X	?	X	X	X	X	X
3. In-kind resources		X	?	X				

SUMMARY OF FEATURES OF REGIONAL PROGRAMS AND PLANS
(continued)

Program Feature	Regional Program or Plan Reviewed							
	WICHE	WAMI	RDEP	WOI	CSU	NEBHE	Georgia, North Carolina & South Carolina	Tufts
B. Costing or Other Basis for Establishing Fees								
1. Operating costs	X	X	X	X		X		X
2. Operating and capital costs			?		X			
3. Not based on cost							X	
V. PARTICIPATION BY STATES IN POLICY-MAKING OF SCHOOL(S)								
1. Representation on governing board				X		X		
2. Representation on advisory committee		X	?		X		X	X

V. APPLICABILITY OF FEATURES OF PROGRAMS REVIEWED TO THE REGIONALIZATION OF OPTOMETRIC EDUCATION IN THE WEST

Access and the Admissions Process

The manpower report completed on this contract indicates that expansion of the capacity of the existing three schools in the West will not be required to meet the region's manpower needs. Given the limitations of their existing facilities, the schools believe expansion would be educationally undesirable.

Since the capacity of the schools is more than adequate to meet the region's need, allocation of student spaces will not be required because of a scarcity of spaces. However, the data indicate that there is a need to change somewhat the access for students from certain states. Changing access patterns should be part of a larger strategy to encourage the redistribution of the optometric manpower supply within the region. As a practical matter, the distribution of access for students will be decided by the states; this distribution will be equitable in the sense that each state will make its own decision about how many students to support in schools of optometry.

Distribution of regional students to the three schools now occurs in an uncoordinated fashion. It appears that each of the schools would prefer to maintain their autonomy in this regard. The existing WICHE Professional Student Exchange Program has provided an effective and flexible access mechanism; however, this program creates some uncertainty for both students and schools. A different mechanism could be set up to establish a quota for each state in the entering class in one or more schools. It appears desirable for students from each state to have a choice among the schools in the region. If quotas were established, some method would be needed to achieve an equitable distribution of students among the schools.

Participation in the admissions process by states involved in a regional optometric education program is desirable. It would appear feasible for academicians designated by participating states to serve on admissions committees, as is done in the WAMI or WOI programs.

Although the regional programs reviewed did not contain any special mention of mechanisms to help minorities, it appears that such a mechanism is needed to recruit and retain qualified students. Although minorities represent over 20 percent of the West's population, they are drastically underrepresented among practicing optometrists and among students currently enrolled in the schools of optometry. In addition, minorities use vision services less often than other groups in the population.

Program Elements

The first year optometric curriculum includes specialized coursework, requiring special equipment and staff, in addition to the basic science coursework. Without a need to expand enrollments, decentralization of the basic science instruction would result in under-utilization of existing facilities and unnecessary duplication of equipment and staff at other sites.

Decentralization of the clinical curriculum during the fourth year appears desirable, however. Each of the schools has already developed some extramural clinical sites. Although these sites are often of inconsistent quality, they provide needed clinical materials, as well as exposure to different practice settings. The preliminary plan for regionalization of optometry education will recommend that a network of clinical sites be developed in areas of unmet needs in the participating states. It will also be suggested that the three schools cooperate in the operation of these sites; this cooperation should improve the quality of clinical education. The network will also provide a means to deliver additional services to sending states. In addition, it is hoped that students who return to their home state for part of their training will be more likely to begin practice in that state. It has also been suggested that a residency program in optometry could be developed in some of these extramural clinical satellites.

Relocation of one of the existing optometry schools to the campus of an academic health sciences center may not be feasible. However, it is believed by many that such an affiliation would be desirable. This kind of affiliation could encourage the development of multidisciplinary education and practice.

The schools of optometry already provide some continuing education in the states through the programs of the state optometric associations. Some expansion and coordination of these educational activities through a regional program appears appropriate.

The manpower report required by this contract provides the basis for the development of a plan to meet the manpower needs in the thirteen western states. Some states do need to increase their student enrollments, while a decrease may be appropriate for one or two states. Additional program features, including decentralized clinical education will encourage new graduates to locate in underserved areas in the region.

Services to the practicing profession and to the public in a regional optometric program could conceivably be similar to those provided by the WAMI model. In such a program, the schools of optometry would become educational resources to the region.

Sharing of Costs

A report on the cost of education in the western schools is underway which will provide the basis for the costing of the regional plan. There seems little doubt that payments by states will be made on a per-capita basis, calculated on the basis of cost. Other in-kind contributions may be appropriate--for instance, a state could provide a facility to be used as a clinical teaching site.

Participation by States in the Policy Making of the Schools

If the full costs of the educational programs are to be equitably shared by participating states, it would seem appropriate that these states would be represented on the governing boards of the private schools involved in the plan.

VI. GENERAL COMMENTS ON SUCCESSFUL REGIONALIZATION PLANS

> If regionalization can be defined as the rationalization of scarce health resources so that they can better meet the needs of the people in the area, then the United States must acquire much more experience in establishing and using mechanisms that could contribute to that process.[3]

Cost consciousness now pervades the health care system as well as the higher education system in this country. Regional health professional programs which provide more than simply educational access to students from participating states may not produce the most cost-effective graduates. Of course it is impossible to actually measure some of the benefits to sending states which result from a program like WAMI. However, it is clearly very expensive to develop and maintain the linkages necessary to sustain this complex regional program. All of the successful programs reviewed, except for the CSU veterinary program, required large infusions of federal monies in their developmental stages. Given the conservative trend in state governments, it seems clear that some federal money will be needed to implement any new regional plan.

The rules and regulations, developed by the Bureau of Health Manpower, define regional programs as those which have two elements: a shared curriculum, and shared cost. It does appear that the three colleges of optometry could share their fourth year curriculum and clinical placement sites. States that would participate in a regional plan would need to share the cost of the program. Thus a regional plan in optometry seems feasible. The manpower report shows the kinds of needs existing in the West which the plan should help to meet.

No program reviewed involved cooperation between private institutions. While Tufts University is a private institution, its existing reputation and financial base are strong. Although it appears that a consortium arrangement involving private institutions may strengthen these institutions, it may not be easy to convince these schools to give up some of their autonomy in order to establish cooperation. For instance one school may prefer to develop its own contractual arrangements with states, instead of participating in a regional mechanism.

Several characteristics of successful regional plans are worth noting. These programs are able to capitalize on existing resources. The new Tufts program in veterinary medicine may provide the best example of using existing facilities to create a regional program; this appeals to states and probably makes it more likely that they will support the program. Regional programs should be sponsored by an educational institution which is recognized as a strong and credible institution. Regional schools which begin from scratch are perhaps the least likely to succeed. They require a large investment, and the decision about where to locate the school may be fatal to the plan. Most successful regional programs involve public institutions, perhaps because these institutions are more attuned to dealing with state governments. In addition, successful programs seem to have resulted from dynamic and creative leadership.

Successful programs have most often been designed to meet a need generally recognized in the region. Often the need for the program has not been demonstrated by an analysis of manpower data. Since grass roots support is crucial to a complex regional plan, the public must generally believe that it needs more or better health care providers. Medical doctors and veterinarians have generally enjoyed favorable status, and it is not surprising that regional programs to educate these groups have been most successful.

In summary, regionalization is both complex and costly. The need upon which a regional plan is based and the benefits offered by the program must allow it to compete favorably for scarce funds in the political arena.

FOOTNOTES

[1] The member states include: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

[2] Seitz, Larry A., Optometric Services in the Thirteen Western States: A Study of Current and Projected Supply and Demand. A Consultant's Report Prepared for the Student Exchange Programs of WICHE, May 1976.

[3] Ginzberz, Eli, Regionalization and Health Policy, U.S. DHEW Pub. No. (HRA) 77-623, p. 6.

A REGIONAL PLAN FOR OPTOMETRIC EDUCATION IN THE WEST

February 5, 1980

Contractor

Western Interstate Commission for Higher Education
(WICHE)
1540 30th Street, P.O. Drawer P
Boulder, Colorado 80302

Contractor's Project Director

Susan D. Klein, Ph.D.

Contract No. HRA-232-78-0130

Sponsor

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Health Resources Administration
Division of Allied Health Professions
Room 9-22, Center Building
3700 East-West Highway
Hyattsville, Maryland 20782

A REGIONAL PLAN FOR OPTOMETRIC EDUCATION IN THE WEST

February 5, 1980

I. Background

The Western Interstate Commission for Higher Education (WICHE) has had a contract (HRA 232-78-0130) with the Bureau of Health Manpower, Division of Allied Health Professions, to develop a regional plan for optometric education in the thirteen western states. This current contract, awarded in September of 1978, supports only planning; further funding will be required if the plan is to be actually implemented. The basic goals of the plan are to provide adequate educational opportunities and to ensure that the western states will have enough manpower to meet their vision care needs. The benefits of the plan will be similar to those offered by WAMI, the decentralized medical education program based at the University of Washington in Seattle. The unique features of the plan are:

- To improve the services which the existing schools of optometry provide to the western states.
- To develop cooperative programs among the three schools which can better meet the region's needs.

The project's Advisory Committee has met periodically; this committee is composed of representatives of both administrative and legislative branches of state governments, state higher education agencies, the optometric profession, health planning agencies, educational institutions, and others. Contacts have also been made with state, regional, and national organizations of the optometrists. Representatives of the three western optometry schools (University of California, Berkeley, School of Optometry; Southern California College of Optometry; and Pacific University College of Optometry) have been actively involved in developing a sound program.

Two reports have been completed since the beginning of this contract. A manpower report, Vision Manpower Needs in the Western States, examines characteristics of the current supply of optometrists in the West and projects the supply to the year 2000; optometric school enrollments and factors affecting the need and demand for vision services are also analyzed. A second report, Review of Regional Health Professional Programs, reviews active regional health professional education programs in the western states and existing regional optometric education plans in order to determine their applicability to the regionalization of optometry education in the western United States. These two reports have provided the basis for the proposed regional plan.

A draft of the preliminary regional plan was approved by the Advisory Committee in October 1979. WICHE is now arranging for this regional plan to be reviewed by key decision makers in each of the thirteen western states. The state review process will include representatives of higher education, the optometric profession, WICHE, state health departments, and the executive and legislative branches of government. The primary purpose of these reviews is (1) to assess the interest of each state in participating in the regional program, and (2) to assess what state resources are available to implement the plan. The results of the thirteen state reviews will be incorporated into the project's final report on the proposed regional plan, to be submitted to the Bureau of Health Manpower in June of 1980. Additional funding is being sought to implement the proposed plan and to develop new program components, until operational costs are assumed by participating states as a part of the PSEP support fees.

II. Basic Objectives of the Regional Plan

The health manpower policies of the country are in transition. Policy changes are being affected by several different realizations. First, it appears that the United States may not be facing a "shortage" of health practitioners, but rather a maldistribution problem. Some areas of the West are underserved--most often rural or inner city areas; innovative efforts must be made to encourage new practitioners to serve in these areas. It has become clear that simply producing more practitioners will not necessarily result in improved health status of the population; there is now greater interest in training primary care practitioners instead of specialists. Optometrists are primary vision care providers; they often provide the patient's first contact with the larger health care system. The optometrist may help detect and prevent more serious health problems and refer the patient to a specialist. In addition, optometrists are more likely than physicians to settle in rural areas; optometry services are more accessible to many of our citizens than other kinds of health care.

It is also apparent that all manpower problems may not be best solved at the federal level; there is growing interest in developing state and regional solutions to these problems. This plan to regionalize optometric education represents a unique approach to meeting the primary vision care needs of the West. Federal monies have provided an incentive to change; however, real responsibility for the development and implementation of the plan rests at the state and regional level. The result of this partnership is a plan which can be responsive to the diverse needs of the western region.

The goals of the program are directed toward the fulfillment of the educational and service needs of the thirteen western states with the assistance of the three optometry schools existing within the region. Each component of the program relates to one or more of these general objectives. The following goals of the plan are not mutually exclusive, but are in fact complementary:

- Provision of educational opportunity to qualified students, whether or not their home state has a college of optometry.
- Provision and maintenance of an adequate supply of optometric manpower appropriately distributed within the western region.
- Improvement in the delivery of primary vision services to the public.
- Enhancement of the quality of optometric education.
- Assurance of the financial stability of the optometric schools in the WICHE region in carrying out the various components of the regional plan.

III. Program Features of the Regional Plan

A. Access and Admissions

The implementation of a regional admissions plan will provide educational opportunity to qualified applicants in the region and maintain an adequate supply of optometric manpower in each of the western states. The schools have already been pursuing regional admissions plans by participating in WICHE's Professional Student Exchange Program (PSEP) and other direct state contractual mechanisms, and by establishing state enrollment guides within their individual admissions processes. Implementation of a single, coordinated plan for the region would provide more equitable matching of educational resources with states' needs.

On the basis of the report on optometry manpower supply in the West recently completed by WICHE, it appears that the region's three existing optometry schools will be able to meet the future needs of the West's population as currently projected. However, there are two equally important factors which states weigh in deciding how many students to support in any field: educational opportunity and the state's need for manpower. Data on both of these factors are presented in WICHE's manpower study. The particular value placed on these two factors varies from state to state. There are some states that wish to provide their residents high access to professional degree programs even though these states may be reaching a point of oversupply of manpower. Other states may wish to support students mainly on the basis of projected manpower needs and do not place as great importance on providing educational opportunity.

Table 1 presents information about the number of students which should be supported by each state on the basis of manpower considerations alone. The supply of optometrists in the region has increased slightly from 10.9 to 11.4 optometrists per 100,000 population since 1973. Eight states currently have ratios well below the regional average of 11.4: Alaska, Arizona, Colorado, Hawaii, Nevada, New Mexico, Utah and Washington.* On the basis of manpower projections it appears that several states should increase significantly the number of students enrolled in schools of optometry (Arizona, Colorado, Nevada, Utah). However, it should be noted that manpower projections may be subject to error, particularly because of inaccuracy in predictions of population growth and migration.

Table 2 presents information relating to access to optometry education in each state. It is difficult to find one best indicator of educational access. The measures in the first two columns are not entirely satisfactory measures of access. Total population in column (1a) and bachelors degrees in column (1b) are proxies, proportionately, for the numbers of state residents reaching the age where they would be eligible to apply for professional education in optometry. Another proxy for this number (in each state) is the number of high school graduates four years prior to the year concerned; it may reflect more precisely the number of long-time state residents which should be given access to optometric education. The annual number of high school graduates will vary considerably over the period 1976-1986, resulting in varying ratios of access from 1980-1990 when

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*These data have been taken from WICHE's report entitled Vision Manpower Needs in the Western States (June 1979).

TABLE 1

ANNUAL ENROLLMENTS IN ENTERING CLASS CALCULATED TO MEET REASONABLE MANPOWER OBJECTIVES

State	Optometrists Per 100,000 Population		Annual Enrollment in Entering Class to Meet Objective[2]	Special Considerations[3]	Indicated Number from Standpoint of Manpower
	Current Ratio 1978	Reasonable Objective 2000[1]			
ALASKA	9.2	11.4	0.0	Sparcity of population. Needs of native groups.	1
ARIZONA	8.4	11.4	7.4	Proportion of aged population requiring greater care.	9
CALIFORNIA	12.5	12.5	79.6		80
COLORADO	9.3	11.4	15.5	Prospective energy boom may prove population projection to be low.	16
HAWAII	9.4	11.4	3.7		4
IDAHO	12.2	12.2	0.4	Low ratio of ophthalmologists	1
MONTANA	15.1	15.1	7.6	Present very high ratio. Low ophthalmologist ratio	7
NEVADA	8.3	11.4	6.1		6
NEW MEXICO	7.4	11.4	6.4		7
OREGON	13.6	13.6	6.1		6
UTAH	6.7	11.4	12.4		12
WASHINGTON	9.9	11.4	22.7	Migration measure probably reflects abnormal period of soft economy. Recent heavy in-migration probably has reversed that reading.	18
WYOMING	13.0	13.0	0.0	Population projections--probably low.	0
REGION	11.4	12.2	167.9		167

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[1] Those now above regional average are kept at current ratio. Those now below are raised to regional average.

[2] Assumes students return to home state at recent rate and assumes migration at recent rate. (p. 80, Vision Manpower Needs in the Western States).

[3] See state summaries in Vision Manpower Needs in the Western States, from page 85 on.

TABLE 2

ANNUAL ENROLLMENTS IN ENTERING CLASS CALCULATED TO MEET REASONABLE STUDENT ACCESS OBJECTIVES

	Column 1		Column 2	Column 3			Column 4	Column 5
	Average for 1975-1977 Entering Classes			Ratio of Number[3] in Preceding Column Per 1,000 High School Grads 4 Years Earlier				
State	a Number[1] per 100,000 Population	b Number per 100[1] Bachelor Degrees Granted in State	Number[2] Needed/1980 Population to Meet Region Average (.50)	a 1979-1981	b 1984-1986	c 1989-1991	Special Considerations	Indicated Number from Standpoint of Student Access
ALASKA	.40	.33	2	.443	.358	.403		2
ARIZONA	.35	.09	13	.494	.444	.464		12
CALIFORNIA	.45	.12	112	.417	.445	.508	As in other professional fields, California can be expected to have significant numbers enrolled in schools outside region	95
COLORADO	.38	.07	14	.392	.381	.419		15
HAWAII	.82	.20	5	.439	.436	.536		5
IDAHO	.51	.15	5	.395	.384	.399		5
MONTANA	1.27	.26	4	.326	.348	.419	High interest & past generous support	5
NEVADA	.86	.37	3	.394	.335	.365		4
NEW MEXICO	.71	.17	6	.332	.330	.400		7
OREGON	.57	.13	12	.393	.403	.428		12
UTAH	.54	.07	7	.354	.350	.351		9
WASHINGTON	.45	.10	18	.353	.362	.396		20
WYOMING	1.61	.50	2	.348	.326	.328	State's policy of providing great access in many professions	4
REGION	.50	.12	203	.402	.413	.460		195
U.S.	.49	.12						

[1] Vision Manpower Needs in the Western States, page 59. Also, see footnotes there.

[2] 1980 population from individual state tables in Vision Manpower Needs in the Western States.

[3] High school graduates from Projections of High School Graduates in the West, published by WICHE, June 1979.

TABLE 3

DETERMINATION OF EQUITABLE ENROLLMENTS IN ANNUAL ENTERING CLASS FOR USE IN THE REGIONAL PLAN

	Indicated Annual Number in Entering Class					
	From Manpower Standpoint	From Access Standpoint	Average[1] Number Actually Enrolled 1974-1978	Current Limit[2] on Number Supported in WICHE PSEP	Number[7] Used in Regional Plan	State Decision About Number of Students to Support
ALASKA	1	2	1.5	No limit	2	
ARIZONA	9	12	7.0	6	11	
CALIFORNIA	80	95	94.5	(57)[3]	90	
COLORADO	16	15	8.0	10	15	
HAWAII	4	5	8.0	6	5	
IDAHO	1	5	4.0	4	4	
MONTANA	7	5	7.5	5	6	
NEVADA	6	4	4.5	4	5	
NEW MEXICO	7	7	9.0	7[4]	7	
OREGON	6	12	14.0	7	10	
UTAH	12	9	7.0	4	10	
WASHINGTON	18	20	18.5	11	19	
WYOMING[8]	0	4	8.0	9[5]	4	
REGION	167	195	191.5	76[9](133)[6]	188	

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[1] Individual state tables in Vision Manpower Needs in the Western States.

[2] WICHE PSEP administrator.

[3] Californians in U. of California, Berkeley entering class, 1977-78; other Californians attend Southern California College of Optometry, Pacific U. College of Optometry, and out-of-region schools.

[4] Includes 3 contract places at Houston.

[5] Under bilateral contracts with Southern California College of Optometry and Pacific University College of Optometry, not WICHE.

[6] Including the 57 for California.

[7] NOTE: this number reflects a judgment by the WICHE staff about the minimum number of students which should be enrolled by each state.

[8] Wyoming will support all students who wish to attend optometry school.

[9] Includes a figure of 3 for Alaska.

this proxy is used in the measure of access; column (3 a, b, and c) show these varying access ratios. The final column summarizes the various information and suggests the number of students which should be supported by each state on the basis of access to education only.

Table 3 summarizes the data suggested by both manpower and access considerations, compares those figures with current enrollments and suggests an equitable target for each state. The numbers listed in the column on table 3 reflect a series of judgments based on the data presented in tables 1, 2,and 3. States may wish to consider other factors in deciding what numbers of students to support. For instance, these numbers do not in any way reflect a correction of the underrepresentation of minorities. In addition, these numbers assume that all graduates will become active practitioners; in reality,all do not become active practitioners. A state's final judment about how many students to support in optometry is clearly subject to fiscal, political,and other considerations.

In this regional plan, access to education would be achieved through legislative action in individual states. The three schools collectively would guarantee a minimum number of admission slots for qualified applicants from each of the participating states. In other words, the states within the region would be assured that a certain percent of the enrollments will come from the sending states,provided that the applicants are qualified. The minimum number of admission slots for each participating state would be established on the basis of recent application and acceptance trends in each of the three schools. Decisions on individual admissions would be made by each school. Equitable distribution of the region's students regarding admissions to the three schools would occur through individual school action, cooperating with the advice of a Regional Advisory Committee (see the description of Coordinating Mechanisms on page 16).

Under the regional plan, students could apply to any or all schools. Acceptance at one school would not guarantee acceptance by another school. To facilitate program operation, schools would adopt a common date for announcing student acceptances. The student would also choose which admissions opportunity he or she wished to accept.

Under this regional plan, the participating schools would give preference to qualified students from the participating states. The schools could accept qualified students from other states outside the region to fill those spaces not required by the states participating in this plan.

The number of applicants has started to decrease in all health professions, including optometry. Minorities are seriously underrepresented in the profession while women are less so. In order to maintain a large enough applicant pool, particularly of minorities and of applicants from underserved areas, it is proposed that recruitment efforts be established and coordinated on a regional basis. The involvement of a Regional Advisory Committee, State Coordinating Committees, state optometric associations, and private practitioners would be critical in this effort to identify, recruit and retain minority students (see the discussion of Coordinating Mechanisms).

In order to implement the access and admissions component of the regional plan, two mechanisms would be necessary. The proposed Regional Advisory

Committee would review current enrollment data, periodically assess the optometric manpower needs of the states and the region, provide input from each of the participating states, make recommendations to the schools regarding admissions policies, and serve as a liaison between applicants and individuals responsible for the processing of applications at the three schools of optometry. The State Coordinating Committee would provide advice about access and admissions in each state; a member of this State Committee would also be a member of the Regional Advisory Committee. A procedure could be established to allow members of the State Committee to assist in the initial application review or to provide an opportunity for the applicant to be interviewed in his or her own state.

B. Cooperative Network of Off-Campus Clinical Training Sites

This program feature addresses several objectives of the regional plan. These clinical training sites will help encourage optometry students to practice in underserved areas, will improve the quality of vision services available to the public, and will improve the quality of students' educational experiences.

It has been proposed that (1) at least one clinical site be established in each participating state, and (2) that the three schools should cooperate in the operation of these clinics and in the placement of students. It has been much easier for schools to send students to off-campus training sites that are close to the campus. This trend has helped to encourage students to set up practice in that area with which she/he is most familiar; that is one reason why Oregon and California have such favorable ratios of optometrists.

The three optometry schools within the WICHE region will have the responsibility for the establishment and maintenance of at least one clinical training site in each participating state in the region. Because of the cooperation among the schools, each of the institutions would assume responsibility for clinic site development in only about five of the thirteen western states. Students from a particular state would be required to return to their home state or to another underserved area for at least one clinical rotation and, in some cases, for most of their off-campus clinical assignments. It is believed that this will increase the likelihood of students beginning practice in these locations. A cooperative agreement would be developed between the schools that would permit students attending any of the three schools to obtain some of their clinical training in a clinic in their home state--no matter which school maintained that clinic.

Although optometrists tend to distribute more evenly than do physicians, there is a marked maldistribution of optometrists within the region. The regional plan would encourage the schools to work with the states (health departments, health systems agencies, and optometric associations) to identify underserved areas or populations. Geographically underserved areas may include remote rural areas or inner city, low income census tracts. Underserved populations may include minority groups, those with learning disabilities or other handicaps, and the elderly.

Our population is rapidly becoming more aged; the more aged the individual the greater is his or her need for vision care. During the mid-forties, loss of elasticity of the lens (presbyopia) makes reading more difficult and reading glasses are ususally required. At this age, the incidence of glaucoma, cataract, and other degenerative diseases begins to increase. During the sixties and seventies, vision problems become more common, more severe and more debilitating. There are thousands of older people in the region who suffer with poor vision, when adequate treatment could bring them near-normal vision.

Low vision care--which could help many elderly function more independently--is not easily accessible in many areas of the West. There are only about forty-three cities in the entire United States which have facilities providing comprehensive low vision care, and the majority of these facilities are open only one day a week. This kind of care is generally not provided by private practitioners because they lack specialized training and equipment; in addition, providing this kind of care can be time consuming and tedious. Therefore, low vision clinics are the main source of care to patients who need this kind of service. The low vision clinic established cooperatively by the Southern California College of Optometry with the State of Nevada could serve as a model for other states; it provides a learning center for students as well as needed care to patients.

While the projected increase in the need for vision care in the region can be greatly attributed to a simple increase in the size of the population, there are some states where the aging of the population will significantly affect the need for services. Arizona, for instance, is projected to increase its need for optometric services by more than ten percent by the year 2000 simply because of the increased proportion of aged in that state.

Another drastically underserved group in the West is children with learning disabilities. These problems require multidisciplinary intervention. If appropriate care is not given, the development of the child's potential may be seriously limited. While it is very difficult to know precisely how many of these children in the West do not receive adequate care, it is certain that the cost of this unmet need to society is great.

The development of well-supervised, off-campus clinical training programs can provide valuable learning opportunities for students. Often the clinics operated at the schools provide exposure to a homogeneous, basically healthy patient population. In a "real life" setting the student is confronted with a larger number of patients, a greater variety of types of people, and a larger variety of health problems.

In addition, the student will be exposed to different types of practice models--for instance, the health maintenance organization setting. Many of the clinical training sites will provide students an opportunity to work in a multidisciplinary setting--perhaps learning how to interact with the family physician or an ophthalmologist. At the same time, these training sites can help provide vision care to people who may not otherwise receive care.

The schools have already developed a number of clinical training sites through the region (see Appendix A). Three states currently have no outreach clinic: Idaho, Utah, and Wyoming. These clinics provide educational experiences for the students as well as vision care to patients. These clinics, along with the new ones designed to meet the needs of the region and the participating states, would comprise the off-campus network.

In addition, the off-campus clinics would:

1. Make available the consultative resources of the three schools of optometry to state and local governments, departments of health or education, for example, and to other organizations, such as consumer groups, research foundations, and educational institutions.

2. Provide an organizational base from which to recruit minority students.

3. Provide a base from which to develop advanced educational or residency programs at appropriate clinical locations, particularly clinically-based continuing education programs to help ensure the clinical competence of practitioners.

4. Foster the cooperative exchange of students and faculty in the various clinical training programs. This exchange would provide a broader range of learning experiences for both students and faculty.

5. Provide vision care practitioners in the various areas with a referral site for unusual cases needing specialty services, as well as consultative services in individual problem cases.

Policy and operational problems involved in developing a cooperative clinical network will be resolved by appropriate representatives of the colleges. The operation of the network will rest with the colleges. State and Regional Coordinating Committees will provide advice and guidance to the schools about state and regional needs relative to the operation of the network.

C. Manpower Program

One of the most important objectives of the regional plan is to ensure an adequate, appropriately distributed manpower supply. There is a serious maldistribution of optometrists within the region. One state has 15.1 optometrists per 100,000 population, whereas another has only 6.7. Furthermore, projections show that this maldistribution will persist if no policy changes are implemented. In addition, minorities are dramatically underrepresented among practicing optometrists as well as among optometry students.

Career guidance and recruitment of qualified students, including females and minorities, would be a vital part of the program to ensure appropriate representation of all ethnic and racial groups and also to ensure an adequate future supply of optometrists in each of the western states. The decentralization of clinical sites provides an opportunity to encourage minority students to enter the profession. A regional program would provide visibility to the optometry profession and the opportunities for optometric education in the West; this visibility would help generate sufficient numbers of qualified applicants to improve the current maldistribution of optometric practitioners.

A decentralized network of clinical placement sites will provide an important basis for the manpower program. A stronger relationship between the schools and representatives of optometry would lead to a coordinated and continuous effort to facilitate the return of graduates back to their sending states or to other areas needing optometrists. Optometric associations and practitioners could provide assistance and guidance to students pursuing the professional degree program. In addition to providing externship placement opportunities, practicing optometrists could identify potential clinical training sites and assist in developing clinical programs that would serve areas of unmet vision care needs within the state(s) whether in the private or public sectors.

Although each optometry school now has a method of assisting new graduates to find a place to practice, the practice selection process could be significantly improved. A coordinated program that would involve the entire region and all three schools would enhance the placement process. Emphasis would be given to assisting the graduate from a particular state to return to the sending state and/or to other areas of unmet need to provide vision care. Such a service would assist the new graduate, as well as the active or retiring practitioner who is in need of an assistant or associate.

Specific components of the manpower program would include:

- Cooperation among the existing recruitment and placement activities of the three colleges.
- Linkage between the colleges and optometric professional organizations in each of the states.
- Use of the National Health Professionals Placement Network, based at the University of Minnesota, or a similar data-based system to provide graduating students greater access to information about communities needing optometrists.
- Development of student materials about how to select a practice site (e.g., available sources of data, how to evaluate data, indicators of need, who to contact, etc.).

The thrust of the manpower program is to increase information sharing and to make future practitioners more aware of where their services are actually needed. Individual states may wish to explore specific incentives to encourage practitioners to locate in serious shortage areas. However, increased access to information at a regional level should contribute to the solution of the maldistribution problem.

D. Institutional Resource Sharing and Improvement in the Quality of Education

One of the stated objectives of the proposed regional program is the enhancement of the quality of optometric education within the western states. This objective is addressed by several program elements including the institutional resource sharing component. In general, this component is envisioned as newly developed, formalized interaction among the schools to improve the quality of education. Specifically, institutional resource sharing would include the following five activities:

1. Development of common learning resource materials,
2. Implementation of a joint faculty development program,
3. Coordination of graduate student recruitment,
4. Coordination of library services, and
5. Development of advanced educational programs for practitioners.

Development of Common Learning Resource Materials

During the implementation phase of the regional program, teaching and evaluation materials will be developed for the off-campus clinical sites. Rather than each site developing its own independent learning resources, the schools will cooperatively develop the required instructional materials. The necessary learning resources would include items such as instruction guides, audio-visual aids, model case analyses for small group seminars, on-site reference resources, and clinical evaluation tools.

Prior to developing the learning resource materials, the clinic directors and faculty members from the three schools need to review the existing outreach programs to determine their similarities and differences. After this review, a teaching model will be selected for implementation at those sites which may accommodate students from all schools. Once the model has been selected, the clinic directors or faculty will develop the learning resources to support the mixture of seminars, self-study, and clinical work that will occur at these sites.

The process that is used to develop materials for the outreach clinics will establish an operational model that may extend to other areas of the curriculum. In future years, common resource material could be developed or exchanged for selected courses. Such efforts reduce duplication, facilitate information exchange, and increase the resources available to a faculty.

Implementation of a Joint Faculty Development Program

Once the off-campus clinical sites have been selected, faculty will be hired to staff these clinics. In order to assure that these teaching programs operate in a parallel fashion, the clinical faculty will participate in an annual orientation and development program. This program will be presented by the clinic directors and faculty of the three colleges and will be one or two days in length.

Initially the program's objectives will focus on informing the outreach faculty of their teaching and evaluation responsibilities relative to the schools' curriculum. Future programs, however, will focus on knowledge acquisition and skill development. The subject matter will be selected to improve both clinical and teaching skills of the outreach clinic staff. In addition, these annual meetings will serve as a valuable management tool for coordinating the activities of the many outreach clinics.

In future years, the faculty development program for the clinical faculty could be expanded to include faculty from other curricular areas. An annual program would facilitate exchange among the three schools and lead to overall curriculum improvements. Such a program would prove especially beneficial to new faculty members. Complementary to an annual instructional conference, short-term exchanges of faculty could be arranged to allow faculty to pursue development activities not available at their institution. These exchanges may permit coordination of research, development of joint proposals, and interaction with recognized experts in one's field. Faculty could undertake some teaching responsibilities during these exchanges which would broaden the education of the students at participating institutions.

Coordination of Graduate Student Recruitment

Each of the three existing institutions offers some form of graduate education. These programs are essential for the development of faculty and practitioners for secondary and tertiary care. Highly qualified students from all three schools should be encouraged to enter the doctoral program at the University of California, Berkeley, School of Optometry. Qualified students in the region's schools should also be encouraged to enter the residency program at the Southern California College of Optometry and the master's program at the Pacific University College of Optometry. The recruitment of students into such programs can be facilitated by the development of a brochure outlining all of the graduate education opportunities offered by the three schools. Information can also be disseminated through individual and group sessions between faculty and students from different schools. These sessions could probably be arranged with minimal additional costs if coordinated with scheduled regional program travel for faculty or administrators.

The regional program can also facilitate the development of new graduate programs. It would appear that the regional program could serve as a vehicle to coordinate the development of residency programs within the western states. A residency program affiliated with all three western schools could utilize resources from all institutions and at the same time eliminate the competitiveness and duplication that sometimes develops in such activities.

Coordination of Library Services

The western states' optometric literature needs can better be served with a more formal library arrangement with the three western educational optometric institutions. Many health science personnel in states without a visual science educational center are unable to fill their information needs. Libraries' acquisition lists of new books might be helpful. New audio visuals available on vision and new journals which have recently been published are all areas in which visual scientists could find needed information. Reference questions can be answered immediately over the telephone or, if more complicated, through the mail. Bibliographies could be compiled and literature searches done by computer terminal. Current research results will be available more quickly to the practicing optometrists.

The libraries of Pacific University, University of California, Berkeley, and Southern California College of Optometry cooperate in some ways already. The Association of Visual Science Librarians brings together libraries interested in visual science. Its annual meeting gives them an opportunity to discuss mutual problems and solutions each year. During the last meeting, the agenda included papers on indexing in visual science, library collection policies, acquisition approval plans, standards and accreditation, and SCCO's media resources project.

During 1979, a supplement to the Union List of Vision-Related Serials was completed and will be available to all participating libraries. The Union List enables the librarians to ask for material in another library through interlibrary loans which otherwise might be difficult to locate. In addition to journal articles, books or theses may be borrowed on the same interlibrary loan agreement.

Development of Advanced Educational Programs for Practitioners

Through the regional program, the three schools will cooperate in delivering educational programs for practitioners. These may take the form of current continuing education offerings, clinical residencies, structured individual study or advanced clinical training. The latter concept is of particular importance with respect to the regional program. The clinical training sites established within the participating states can provide the facilities for clinical education programs for practitioners. Such programs could be designed to upgrade the general skills of practitioners or teach new clinical techniques. Programs could be intense in nature and structured for small groups. The clinic staff and/or visiting faculty would serve as instructors and cost savings could be incurred by utilizing these resources during nonacademic periods. Also, practitioners who served as part-time instructors in the outreach clinics could benefit from the structured faculty development programs discussed above. While professional student education is one purpose of the outreach clinics, another is to extend the advanced educational opportunities of the colleges into the community.

The above five activities are but some of the programs that can result from structured interaction among the three schools. Most likely other areas will be investigated as the regional program is implemented. Whatever activities are pursued, the adoption of a regional approach can greatly improve the quality of optometric education when compared to plans where each institution operates its own independent programs. Furthermore, the desired results will be obtained at a lower cost through a regional program of resource sharing.

E. Financial Plan

The long-range success of any program designed to serve the region is dependent upon the states being willing to support their students who participate in the program. However, the development of an acceptable plan under which each state assumes an appropriate share of the educational costs is a complex problem. Currently, the three optometry schools in the region receive state support through support fees of the WICHE Professional Student Exchange Program, through direct state support in the case of the public institution, and through bilateral contracts with non-WICHE states in the case of the private institutions.

In cooperation with the three colleges, WICHE is determining the costs which are involved in developing and operating the program elements of the proposed plan. In addition, a mechanism will be developed to allocate the costs of the regional education program among the participating states. A subcommittee on costing has reviewed historical cost estimates for the three schools and has examined the costing of the components of the regional plan.

An examination of the regional plan shows that all program elements with any identifiable ongoing costs will be of benefit to all students attending the three schools. Likewise, the net expenditures of the present professional-degree instructional programs of the three schools, as measured by the analysis of historical costs, are of benefit to all students attending. If the schools are to adjust their programs to provide increased services to states as described in the proposed plan, the tuition levels of the schools must be adjusted upwards to pay for the cost of these new elements.

The concept of a "regional program" suggests that students supported by participating states should pay a common tuition, which would mean that the participating states would pay a common per-student amount. Participating states will pay an amount equal to the average net per-student cost of education (including the cost of new regional components) for each student supported, minus the amount of tuition paid by the student. In this plan, the full costs of the regional education program will be equitably shared by participating states. Students other than those supported by participating states would pay tuition equal to the average net per-student cost, unless some third party pays all or a portion of that amount on the student's behalf.

It is hoped that the program features of the regional plan will be developed and operated initially by an outside funding source. During this two- to three-year period, states would continue to pay net per-student costs of the current programs under WICHE's Professional Student Exchange Program. The new program elements would be in place for WICHE's study of the cost of education in 1982. By 1983-84, states would assume the operational costs of the regional program. Net per-student costs would then include the costs of the current educational programs plus the ongoing costs of the added features of the regional program. At this time, it is estimated that operational costs of the new regional components would increase the existing cost of education by 200 to 400 dollars per student.

IV. Flexibility of the Plan

It is acknowledged and respected that each of the schools of optometry has different strengths and that each of the western states has unique needs. This preliminary plan addresses the problem of educational access, improved quality of education, the return of graduates to the sending state, optometric manpower maldistribution within the states and the region, continuing education, and other services provided to the sending states.

The states will have some options within the basic plan. One series of options may be developed around the type of clinical training site needed in that state. A state may identify a particular need for vision care which the school(s) in concert with the state optometric association could meet.

Another option may be to develop a state optometric educational center, either free standing or within the state's university system,that could coordinate the state's optometric educational activities. These centers could be primarily responsible for evaluating the continuing educational needs of the optometrists and their paraoptometric personnel, developing and arranging programs to meet those needs, and maintaining transcripts of continuing education credits. The centers could also coordinate preprofessional curricula within the state's undergraduate institutions, provide pre-optometry counseling services, coordinate and act as liaison to the schools on matters of career guidance and admissions, and operate a placement service for the state. The educational center could also maintain a liaison role between licensed optometrists and educators. In essence, a state optometric educational center, in concert with a Regional Advisory Committee, could be responsible for ensuring that the regional program is responsive to the needs of the state. It is recognized that in some states this concept may not be appropriate; however, a series of options would allow for the basic plan to be modified to meet individual state needs.

V. Coordinating Mechanisms

Because of its unique role in linking the thirteen western states with the three optometry schools in the region, the overall administration of the regional plan would be supervised by WICHE. It will be WICHE's role: to convene the Regional Advisory Committee; to work with the three schools to arrange for the equitable allocation of students' positions; to establish student support fees; and to work with states to establish support levels. During the implementation of the regional plan, WICHE will also work closely with the School Coordinating Committee and help to establish the State Coordinating Committees. Curriculum matters will clearly be within the domain of the participating colleges of optometry.

Coordination of the program will take place at three different levels: at the school level, at the state level, and at the regional level.

A. School Coordinating Committee

In terms of actual implementation and operation of the plan, the coordination of the schools of optometry participating in the plan will be crucial. While the basic decision to join the regional plan may rest with high level administrators, practical and procedural decisions will be made by faculty who actually run the educational programs. Each of the participating schools should appoint one faculty/administrator who will be responsible for the coordination of all regional program activities within the school. This person will also serve on the School Coordinating Committee and the Regional Advisory Committee. The School Coordinating Committee will be composed of representatives of all the participating schools as well as a representative of WICHE. This Committee will appoint subcommittees as appropriate to help resolve policy and procedural issues; for instance, a subcommittee of clinic directors may be appointed to advise on curricular and evaluation policies related to the clinical site network. This Committee will receive advice about policy and procedural issues from the Regional Advisory and State Coordinating Committees.

B. State Coordinating Committee

This Committee will be responsible for the implementation and coordination of the regional program within a state. In addition, the State Committee will provide information about the state's needs to the Regional Advisory Committee and to the schools of optometry. The role of this Committee could vary from state to state.

The composition of this Committee in each participating state will include representatives from the following:

1. State optometric association,
2. Legislative or administrative branches of government,
3. State Higher Education Executive Officer or other appropriate person,
4. WICHE Certifying Officer, and
5. State health department or health systems agency.

The Regional Advisory Committee will determine the method of selection of the members of the State Committees. One member of the State Committee will represent the state on the Regional Advisory Committee.

The State Committee would organize and/or participate in the following activities:

1. Career guidance and recruitment of qualified applicants,
2. Assist schools in the admissions process,
3. Cooperate with manpower aspects of plan--by identifying areas of unmet needs, establishing clinical placement sites, and assisting in graduate placement,

4. Ensure continued support of plan by the state,

5. Communicate to appropriate agencies, institutions and/or groups regarding the plan, and

6. Assist in implementing the continuing education component of the plan.

C. Regional Advisory Committee

The Regional Advisory Committee* will be composed of representatives of participating schools and states and WICHE. This Committee will provide the overall coordination among states and schools and generally supervise the plan. This body shall have procedural and policy making responsibilities and would make amendments to the plan as appropriate. Matters affecting the schools would have to be ratified by the participating schools. Matters affecting the states would have to be ratified by the appropriate state agencies. Access to education would be achieved by legislative action in individual states, and the three schools collectively would guarantee a minimum number of slots to qualified students (as described under Access and Admissions earlier in this document).

The following are some of the policy areas for which the Committee will have responsibility:

1. Make recommendations to the WICHE Commission about support fees and levels,

2. The allocation of admissions,

3. The selection of clinical sites, and

4. The evaluation of the plan.

VI. Conclusion

This regional plan would facilitate the cooperation of existing institutions, both public and private, in meeting the diverse needs of the WICHE states. If successful, this plan could provide an innovative model for other health professions and for other regions grappling with problems of manpower and educational access. The decade of the 1980s will clearly be an era where better use must be made of existing resources; the West can help show the value of regional cooperation.

For more information, contact:

Susan D. Klein, Ph.D.
Project Director
Western Interstate Commission for Higher Education
P.O. Drawer P
Boulder, Colorado 80302
(303) 497-0216

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*This Regional Advisory Committee will follow the policies and procedures as established for the WICHE Regional Advisory Committee on Veterinary Medicine.

Appendix A-1

State	Optometry School	Clinic Site	Population Characteristics
ALASKA:	Southern California College of Optometry	Alaska Native Medical Center Anchorage, AK	Public health service facility serving Native Alaskans
ARIZONA:	Southern California College of Optometry	Fort Defiance Tuba City Chinle Kayenta Many Farms Winslow Teec Nos Pos	Public Indian Health Service facilities serving the Navajo area
	Southern California College of Optometry	Keams Canyon Parker Peach Springs Phoenix Sacaton San Carlos Whiteriver Yuma	Public Indian Health Service facilities serving the Phoenix area
CALIFORNIA:	Southern California College of Optometry	Fullerton Care Convalescent Hospital, Fullerton, CA	Serves elderly patients
	Southern California College of Optometry	Sherman Indian High School Health Center, Riverside, CA	Serves 700-800 American Indian resident students
	Southern California College of Optometry	Fort Ord Army Medical Center Fort Ord, CA	Active duty, retired military, and dependents
		Marine Corps. Air Station El Toro, CA	
		March Air Force Base Riverside, CA	

State	Optometry School	Clinic Site	Population Characteristics
CALIFORNIA:	Southern California College of Optometry	Naval Regional Medical Center San Diego, CA	Active duty, retired military, and dependents
		Norton Air Force Base San Bernardino, CA	
		Terminal Island Shipyard Health Center, Long Beach, CA	Civilian shipyard workers, active duty military, retired military, and military dependents
	Southern California College of Optometry	Baldwin Park Optometric Center Baldwin Park, CA	Primarily Hispanic community
		Optometric Center of Los Angeles Los Angeles, CA	Open to the public - South Central Metropolitan Area of Los Angeles
		Veteran's Administration Hospital Brentwood, CA	Veteran mental care in-patient facility
		Veteran's Administration Outpatient Clinic Los Angeles, CA	Veteran
	Southern California College of Optometry	Children's Hospital of San Diego San Diego, CA	Specialized rotation in the hospital's Speech, Hearing, and Neurosensory Center
		USC Interdisciplinary Health Team, Los Angeles, CA	Selected patients from the USC dental clinic with multiple health problems

Appendix A-2

State	Optometry School	Clinic Site	Population Characteristics
COLORADO:	Southern California College of Optometry	Ignacio, Colorado Albuquerque Area Office	Patients Indian Health Service Hospitals and Ambulatory Clinics - Native Americans
	Pacific University	Colorado Optometric Center Denver, CO	Mixed Hispanic, Black, low income, urban
HAWAII:	Southern California College of Optometry	Tripler Army Medical Center Honolulu, HI	Active duty, retired military, & dependents
	Pacific University	Tripler Army Medical Center Honolulu, HI	Active duty, retired military, & dependents
IDAHO:	None		
MONTANA:	None		
NEVADA:	Southern California College of Optometry	Las Vegas Low Vision Center Las Vegas, NV	Low vision services for the blind
NEW MEXICO:	Southern California College of Optometry	Acoma-Canoncito-Laguna (ACL) Albuquerque Mescalero Santa Fe Zuni Alamo Dulce Laguna Taos	Patient care to Indian Health Service Hospitals and Ambulatory Clinics in the Albuquerque area
	Southern California College of Optometry	Crownpoint Gallup Shiprock Fort Wingate Tohatchi	Patient care to Indian Health Service Hospitals and Ambulatory Clinics in the Navajo area

Appendix A-3

State	Optometry School	Clinic Site	Population Characteristics
OREGON:	Pacific University	Multnomah County Health Department, Portland, OR	Low income White, Black, and Hispanic
UTAH:	None		
WASHINGTON:	Southern California College of Optometry	Madigan Army Medical Center Tacoma, WA	Active duty, retired military, & dependents
	Pacific University	American Lake Veterans Administration Hospital Tacoma, WA	VA eligible, predominantly White males, low income
	Pacific University	Barnes Veterans Administration Hospital, Vancouver, WA	VA eligible, predominantly White males, low income
	Pacific University	Indian Health Service Washington reservations	Low income Native Americans
	Pacific University	Madigan Army Medical Center Fort Lewis, WA	Active duty, retired military, and dependents
	Pacific University	Seattle Indian Health Board Seattle, WA	Low income Native Americans
	Pacific University	Whidbey Island Naval Air Sta. Oak Harbor, WA	Active duty, retired military, and dependents

Appendix A-4

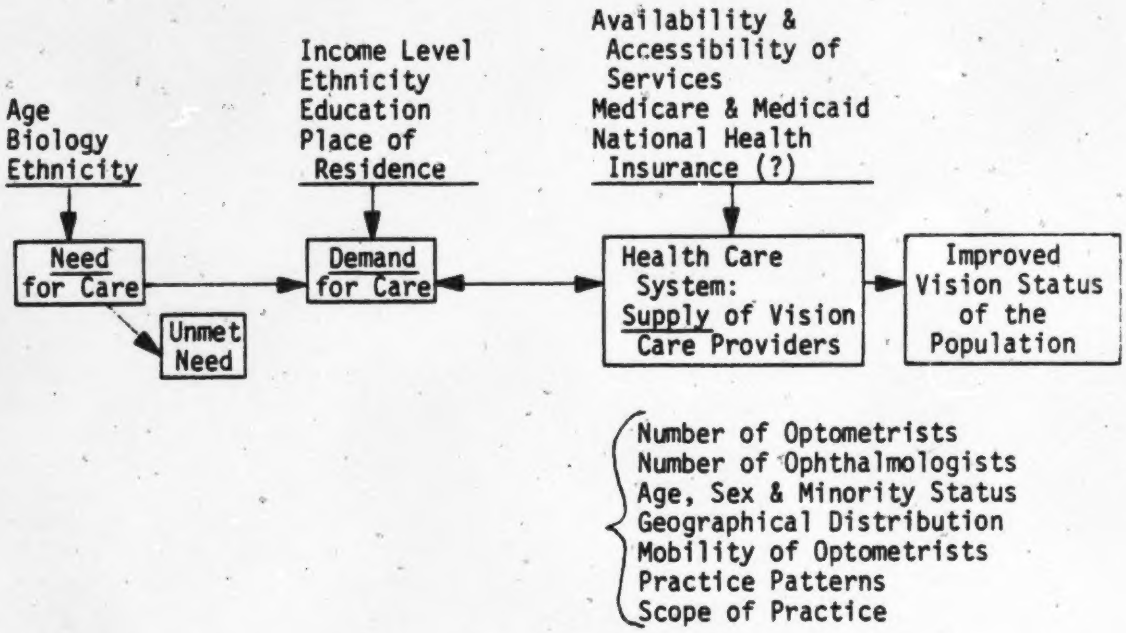
Appendix B

EXECUTIVE SUMMARY *

This manpower report has been written to satisfy, in part, a contract designed to develop a regional program for optometric education in the western United States. The regional plan will provide adequate training opportunities for residents in the western states, as well as help to direct graduates into underserved areas in the region.

The report contains a compilation and assessment of existing optometric manpower supply data for the thirteen western states. By provision of this contract, no primary data were collected. Available data sources used include: the Bureau of Health Manpower and the National Center for Health Statistics (USDHEW), the American Optometric Association, state optometric associations, the colleges of optometry, and the Western Interstate Commission for Higher Education. This report provides the best possible estimates or projections of the supply of optometric manpower for each state in the West from 1980 to the year 2000. It contains the student enrollment levels projected to be necessary for each state to assure certain levels of manpower supply in the year 2000. In contrast to previous manpower reports, this study includes data on the mobility of optometrists as well as data on the distribution of both optometrists and ophthalmologists by county for the region.

In addition to presenting data on the supply of vision care providers, this report also summarizes issues relating to the need and demand for vision services, as depicted in the following figure.


Age
Biology
Ethnicity
Income Level
Ethnicity
Education
Place of Residence
Availability & Accessibility of Services
Medicare & Medicaid
National Health Insurance (?)
Need for Care
Unmet Need
Demand for Care
Health Care System: Supply of Vision Care Providers
Improved Vision Status of the Population
Number of Optometrists
Number of Ophthalmologists
Age, Sex & Minority Status
Geographical Distribution
Mobility of Optometrists
Practice Patterns
Scope of Practice

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*Executive Summary from Vision Manpower Needs in the Western States, June 1979.

Vision problems are among the most disabling to the individual and the most expensive to society. Over half of the total population reports they have had trouble seeing. In addition, over half wears corrective lenses. Vision problems are chronic and developmental; as one ages, care is needed with increased frequency. As the population becomes more aged, this will result in an increased need for vision services. Some states, like Arizona, will experience a significant increase in need because of this aging.

Within the region, there is evidence of an unmet need for vision care. The West as a region has the greatest proportion of persons with very poor vision (20/50 or less). It is estimated that 56 percent of this group (about 921,000 citizens) could see better with proper refractive care. Furthermore, there are about 14,000 people in the region whose blindness could be prevented or cured. These are only two gross indicators of unmet need; there are many more people in the region with less serious problems who could also benefit from proper care.

The need for care reflects the services which should be provided to meet the actual requirements of the population. Demand reflects how many services people really use. Demand is affected by characteristics of the consumer (e.g., education and income) as well as characteristics of the services (for instance, availability and cost). Minority groups appear to be the most easily identified groups which under-utilize vision services.

Optometrists deliver a major amount of primary vision services and often serve as an entry point into the health system; they play a crucial role in prevention and in the early detection of serious problems. Trends within the profession include specialization, group practices, and the growth of third-party payment mechanisms. Many states have recently enacted laws which allow optometrists to use diagnostic drugs.

Most of the vision services needed in the population relate to the basic vision examination and the correction of refractive error. Optometrists and ophthalmologists overlap in their abilities to perform these services. Thus, it is clear that any useful analysis of vision manpower needs must include data on both of these professions. Policy makers who are deciding how many of various types of providers will be needed in the future must resolve the questions about cost and quality cited by this report.

For the WICHE region, the supply of optometrists has increased; in 1973, the ratio of optometrists was 10.9 per 100,000 and in 1978 it was 11.4. There is, however, a serious maldistribution of optometrists within the region. Eight states currently have ratios well below the regional average: Alaska, Arizona, Colorado, Hawaii, Nevada, New Mexico, Utah, and Washington. Even when ophthalmologists are taken into account, the same eight states appear below average in their supply of vision manpower. Furthermore, manpower projections show that a maldistribution of vision care providers will persist to the year 2000 if present trends continue. Some states will have a very low supply (Colorado and Utah) and some states face a possible oversupply (Montana, Wyoming, and Hawaii).

The model used to generate the manpower projections in this report allows for migration by both practicing and newly graduated optometrists. Attrition from death and retirement is figured on the basis of age-specific probabilities, and these numbers are subtracted from the manpower pool. New

graduates are added to the pool. A range of projections was generated by changing assumptions related to student enrollments and the in-migration of optometrists.

Two sets of manpower projections have been produced for each of the thirteen states. One set is based on the assumptions that all students who attend optometry school return to their home state and that no in-migration of optometrists occurs; these assumptions yield a low estimate of future supply. The second set of projections assumes that students return at the current observed rate and that migration continues; this method produces a high estimate.

Chapter VI provides a summary of these projections and other manpower data for each state. Based on manpower needs, it may be appropriate for some states to re-examine their policies relating to the support of optometry students.

There are three schools of optometry in the western region: the Pacific University College of Optometry, Southern California College of Optometry, and the University of California, Berkeley, School of Optometry. The total enrollment capacity of these schools is about 250 per year. If the eight states currently low in optometric manpower wished to reach the regional average and the high states wished to maintain their supply, capacity of these three schools could more than meet the region's need. Based on projected manpower needs, it does not appear that any new schools are needed in the West.

In addition to manpower needs, states are also concerned with educational opportunity or the access which students have to professional education. Regionally, student access to optometric education is slightly above the national average. However, states such as Alaska, Arizona, and Colorado have relatively low opportunity in comparison to states like Montana and, more recently, Wyoming. Surprisingly, the eleven WICHE states without optometry schools have recently enrolled more students relative to population than the two states with schools.

Other characteristics of optometrists are also examined. Several years ago, the age distribution of optometrists was skewed to the high end; it now appears that the supply of young, new graduates will be offsetting those leaving practice. Women and minorities are severely underrepresented among practitioners. Although enrollment figures show steady improvement for women, minority groups do not show similar gains in the profession. In terms of urban-rural distribution, optometrists are much more likely than physicians to locate in non-urban areas.

There are a number of factors which could affect the demand for optometric services. The enactment of national health insurance could increase the demand for care among those who need it. Legislation which provides care for special groups could also generate increased demand. In addition, new means of diagnosis and treatment could result in a greater need for optometrists. The uncertainty of these issues makes it difficult to predict precisely what the real demand for optometric services will be in the future.

The goal of any manpower policy should be to meet the needs of the patient population. Providing a supply of providers is only part of the means necessary to improve the vision status of the population. By presenting both data and relevant issues, it is hoped this report will be useful to planners of higher education and health policy makers.

IMPORTANT NOTICE

NOTE: The following tables 4-7 have been taken from the WICHE report, Vision Manpower Needs in the Western States. Table 4 is numbered 3.1 in this report. Table 5 is numbered 3.2, a similar table 3.3 in the manpower report presents data on the number of Board Certified ophthalmologists instead of AMA listed ophthalmologists. Table 6 and 7 correspond to tables 4.4 and 4.6 respectively.

TABLE 4

SUPPLY OF OPTOMETRISTS IN WICHE REGION
1973 and 1978

State of Practice	Licensed[1] Optometrists 1973	Active[1] Optometrists 1973	Active O.D.s[1] Per 100,000 Population 1973	Licensed[2] Optometrists 1978	Estimated[3] Active 1978	Active O.D.s[4] Per 100,000 Population 1978
ALASKA	18	18	5.5	37	37	9.2
ARIZONA	180	149	7.2	239	198	8.4
CALIFORNIA	2820	2421	11.7	3248	2793	12.5
COLORADO	220	208	8.4	262	249	9.3
HAWAII	88	74	8.8	100	84	9.4
IDAHO	89	85	11.0	112	106	12.2
MONTANA	109	101	13.8	128	119	15.1
NEVADA	57	48	8.7	65	55	8.3
NEW MEXICO	87	80	7.3	98	90	7.4
OREGON	337	305	13.7	367	334	13.6
UTAH	87	75	6.5	102	88	6.7
WASHINGTON	435	385	11.2	422	373	9.9
WYOMING	40	40	11.3	55	55	13.0
REGION	4567	3989	10.9	5235	4581	11.4

SOURCES:
1. Optometric Manpower Resources, 1973. Prepared for Bureau of Health Manpower, HRA, USDHEW (1976).
2. 1978-79 State Licensing Rosters.
3. Number Active estimated by multiplying total licensed by proportion active in 1973.
4. 1978 population--U.S. Census Bureau. P-25, No. 794, March 1979.

NOTE: There are approximately 20 additional O.D.s working for the Public Health Service in the WICHE region that are not included in the 1978 figures above.

TABLE 5

COMPARISONS OF RATIOS OF OPTOMETRISTS AND AMA LISTED OPHTHALMOLOGISTS FOR WICHE STATES

	Ratio of 1978 Active O.D.s to 100,000 Population, 1978	Ratio of 1976 AMA Listed Ophthalmologists to 100,000 Population, 1976	Ratio Combined O.D.s & Ophthalmologists to 100,000 Population	Ratio of Ophthalmologists to Optometrists
ALASKA	9.2	2.5	11.7	.27
* ARIZONA	8.4	5.4	13.8	.64
* CALIFORNIA	12.5	6.1	18.6	.48
* COLORADO	9.3	5.5	14.8	.59
* HAWAII	9.4	5.3	14.7	.56
IDAHO	12.2	4.6	16.8	.38
MONTANA	15.1	5.0	20.1	.32
NEVADA	8.3	4.7	13.0	.56
NEW MEXICO	7.4	4.3	11.7	.58
* OREGON	13.6	6.7	20.3	.48
* UTAH	6.7	5.1	11.8	.76
* WASHINGTON	9.9	5.3	15.2	.53
WYOMING	13.0	4.3	17.3	.33
REGION	11.4	5.7	17.1	.50

SOURCES: 1978 active optometrists--estimated from 1978-79 state licensing board rosters.

1976 ophthalmologists--Physician Distribution and Medical Licensure in the U.S., 1976. Louis Goodman Center for Health Services Research and Development, American Medical Association, Chicago, 1977.

1978 state population--U.S. Bureau of the Census, Series P-25, No. 794, 1979.

1976 state population--U.S. Bureau of the Census, Series P-25, No. 738, 1978.

NOTES: AMA totals of ophthalmologists include board certified and non-certified practitioners.

Combining of ratios from different years assumes that while population and supply may change between 1976 and 1978, the ratio of ophthalmologists to population stays relatively constant for that period.

* State has a residency program in ophthalmology.

Appendix B-6

TABLE 6

FOUR YEAR WICHE STATES OPTOMETRY

STUDENT ENROLLMENTS, 1977-78

State	Pacific U. College of Optometry	Southern California College of Optometry	U. of California Berkeley School of Optometry	Out-of-Region Schools	Total All U.S. Schools
ALASKA	3	1	0	2	6
ARIZONA	8	17	1	4	30
CALIFORNIA	34	124	229	31	418
COLORADO	16	16	0	5	37
HAWAII	11	8	4	6	29
IDAHO	10	6	0	1	17
MONTANA	19	14	1	5	39
NEVADA	7	11	1	0	19
NEW MEXICO	5	14	2	9	30
OREGON	45	7	0	2	54
UTAH	10	11	0	3	24
WASHINGTON	47	13	0	4	64
WYOMING	8	11	0	2	21
	223	253	238	74	788
Percent of School's Enrollment Taken By Students from WICHE Region	67.7%	63.5%	92.2%	2.2%	18.7%

SOURCE: American Optometric Association--Annual Report to House of Delegates, 1978.

Appendix B-7

TABLE 7

COMPARISON OF MINORITY ENROLLMENT IN WICHE SCHOOLS OF OPTOMETRY WITH PERCENTAGE ACTIVE MINORITY OPTOMETRISTS IN WICHE REGION (1973) AND PERCENTAGE MINORITY IN WICHE POPULATION

Race/Ethnicity	Percent of Active WICHE O.D.s, 1973	Percent in WICHE Region Population, 1976	Percent Enrolled in Three Optometry Schools In WICHE Region, 1977-78
Black	.3% (n=10)	5.3%	1.2% (n=12)
Hispanic	.4% (n=15)	12.4%	2.7% (n-27)
Native American	.1% (n=4)	1.2%	.2% (n=2)
Asian American	6.6% (n=265)	3.1%	11.5% (n=113)

SOURCES: Optometrists--Optometric Manpower Resources, 1973.

Minority Population Ratios--Access and Retention of Minorities in Higher Education, WICHE, 1978, and U.S. Dept. of Health, Education, and Welfare Survey of Income and Education, 1976.

Enrollments--American Optometric Association, Report to the House of Delgates, June 20, 1978.